

1995 Index

1 ESS™ switch 3, 10
 10baseT data port 5, 122
 11-Type fiber joint 1, 39, 40
 1A central processor: archeology 3, 31; general 3, 4-9, 28-38, 61
 1A electromechanical panel 3, 20
 1A processor: 3, 10, 20; compared to 1B 3, 20
 1B central processor project: Accelerated Life Testing Program 3, 29, 33, 37; architecture, major logic units 3, 29-30; audits 3, 8; Best Current Practices 3, 8, 29; cable fault isolation 3, 33; challenges 3, 7-9; change control 3, 32; development approach 3, 28-29; diagnostic design, development, and testing 3, 32-34; fault detection 3, 33-34; fault prevention, procedural errors 3, 28-29; fault-recovery design, development, and testing 3, 34-37; field deployment 3, 9; general 3, 4-9; hardware design, development, and testing 3, 29-32; improving on the 1A processor 3, 28-39; North American Equipment and Building Standards (NEBS) 3, 32; object code compatibility with 1A processor 3, 28; physical fault insertion (PFI) 3, 33; project management issues 3, 8; quality gates 3, 8; quality requirements 3, 28, 37; Reliability Assurance Plan 3, 29, 31-32; reliability data 3, 9; reliability objective 3, 7-8; schedule 3, 7; staff issues 3, 8; Switching Architecture Review Board 3, 29; technical issues 3, 8; trouble-locating procedure (TLP) 3, 33-34; utility system 3, 31
 1B evaluation interval benefits 3, 42
 1B fault reviews 3, 45
 1B fault-recovery, diagnostic, and trouble-location programs 3, 41
 1B final SI/PV report 3, 45
 1B FSD reviews 3, 43
 1B master control complex (MCC) 3, 42
 1B practice retrofits 3, 46
 1B processor 3, entire issue
 1B Processor Deployment: *Leading the Way to Flawless Execution* 3, 61-72
 1B processor development planning: generated control pulse (GCP) capture and recovery unit 3, 62; implementation 3, 65; installation and retrofit 3, 63; planning 3, 64; procedure documentation 3, 63; testing 3, 64; transitional hardware 3, 62; transitional software 3, 62
 1B processor project management team, Network Services Division (NSD): contingency planning 3, 71; controlled introduction 3, 69-70; on-site 1B installation and retrofit support 3, 70-71; Plano 4ESS™

switch 3, 70; service reliability 3, 70
 1B processor project team planning: building the plan 3, 66-67; building the team 3, 65-66; Corporate Product Realization Process (CPRP) organization 3, 65; customer-supplier relationship 3, 68; project audits 3, 68-69; quality plan 3, 67-68
 1B processor: compared to 1A 3, 20, 46; contingency capability 3, 62; deployment 3, 61; development planning 3, 62-65; front-end process 3, 22, 23; general 3, 16, 18-27, 40; manufacturing issues 3, 49-60; planning 3, 43; project management team 3, 69-71; project team planning 3, 65; report card marks 3, 46; requirements optimization 3, 23-26; requirements verification, retrofit, feature regression, inter-switch testing 3, 44; requirements, categorization 3, 44; single-team approach 3, 43; SI/PV team 3, 43; system integration and performance verification 3, 43; test development 3, 44; test implementation 3, 44; testing report 3, 45; testing, evaluation 3, 45; testing, partnership value 3, 46; Tracker (status and problem tracking system) 3, 70-71; trouble resolution time-tables 3, 45
 2B1Q multilevel encoding 4, 31, 32
 3B attached processor 3, 11
 3B Attached Processor System 3, 62
 3B2/622 processor 2, 105
 486* 5, 89
 4ESS™ switch: adding processors 3, 16; central processor 3, 7; general 3, 10, 40, 61, 71; in 1B processor 3, 4-9; new 1B processor 3, 18-27; processor upgrade 3, 14
 5ESS® switch: and design for environment (DFE) 6, 61-71; circuit-pack processing 6, 62-65; components 6, 61, 62; equipment 5, 125; general 3, 6, 29, 32, 4, 95-96, 99; Generic 8 (5E8) custom basic rate interface (BRI) 4, 95-97, 101; life cycle 6, 61, 62; power for 6, 44, 45; product design 6, 66-68; system assembly flow 6, 65, 66
 5ESS®-2000 Switch Cellular Gateway 4, 85-93
 5ESS®-2000 switch cellular gateway: sample theoretical network 4, 89-92; use in networks 4, 88-89; with Global System for Mobile Communications (GSM) 4, 92
 6386 computer 2, 110
 80-20, use of assets 5, 108
 800 directory, on Internet 2, 3
 800 Speech Recognition Service 2, 45, 53
 800-service routing 3, 14
 825-1 standard 1, 19
 825-2 standard 1, 19
 825-2825-1 standard 1, 19

A

Abbott, Stuart M. 1, 16-32
 Abstract data type (ADT) 5, 56, 62
 Accelerated Life Testing Program, in 1B processor 3, 29, 33, 37
 Accelerated life-cycle test program (ALTP); general 3, 40, 41, 43, 47; process 3, 41; results 3, 43
 Access Network Systems 2, 109
 ACD *see* DEFINITY® Automatic Call Distribution
 Acetone 6, 63, 64
 Architectures, open 2, 12
 Acid rain 6, 36
 Ackland, Bryan D. 5, 14-33
 Acoustic beam 5, 40
 Acoustic echo canceler (AEC) 2, 54, 65, 68
 Acoustic echo cancellation 5, 41
 Acoustic echo path (AEP) 2, 66
 Acoustic interface, echo canceling microphone 2, 64
 Acoustic leakage 2, 64
 Acrylonitrile butadiene styrene (ABS) 6, 68
 Active flag 5, 63
 Active noise cancellation 2, 57, 64, 68
 Adaptive differential microphone 2, 61
 Adaptive differential pulse-code modulation (ADPCM) standard, 32 kbits/s 2, 20
 Adaptive equalization 4, 33
 Adaptive filter 2, 65
 Adaptive modeling 2, 50
 Add/drop multiplexers (ADMs) 1, 13
 Adjustable speed drive, flywheels 6, 47
 Advanced 800 features 3, 4
 Advanced automatic speech recognition 2, 88
 Advanced Mobil Phone Service (AMPS) cellular network 4, 88, 92
 Advanced Technology Systems 5, 75
 Africa ONE undersea network 1, 12, 99
 Agent empowerment 4, 66
 Agent LoginID 4, 66
 Agent passwords 4, 72
 Aggression, external submarine 1, 56
 Ahuja, Sudhir R. 5, 46-53
 Air emissions, toxic, elimination of 6, 38, 39
 Alcohol-based fuel cells 6, 50
 Algorithms 2, 71 5, 7
 Allenby, Braden R. 6, 8-16
 Alternate energy 6, 44, 46-50
 strategy 3, 41
 ALTP *see* Accelerated life-cycle test program
 America 1 North submarine cable system 1, 3, 24, 41
 America OnLine* 5, 58
 American National Standards Institute

Legend: Issue number in bold face 1
 Page number in regular face 1
 AT&T marks indicated by ™, SM, and ®
 Other corporate marks* at end of index

- (ANSI) 5, 61
 American National Standards Institute T1 (ANSI T1E1.2) 4, 36
 Americas-1 North, SL2000 testbed: cable laying, performance measures 1, 89-90; first system installation 1, 88-90; general 1, 84, 88-91
 Ameritech 5, 8
 Amigo 2, 44
 Amplified spontaneous emission (ASE) noise 1, 93
 Analog coaxial systems, undersea 1, 9
 Analog to digital (A/D) 2, 72
 Analog-type data signals 4, 25, 32
 Analysis, syntactic and semantic 2, 9
 APIs *see* Application Program Interfaces
 Apple* 5, 11
 Application classes, audio coding 2, 25
 Application creation environment (ACE) 5, 109, 110, 114
 Application execution environment 5, 109
 Application Program Interfaces (APIs) 5, 6
 Application programming interface (API) 2, 78 5, 110
 Application software, multimedia 5, 57
 Application-code compatibility 3, 16
 Application-specific integrated circuit (ASIC) 5, 107
 Applications, TTS systems 2, 7
 Approximation algorithms 4, 59
 Aqueous: batteries 6, 47; cleaning 6, 63, 64
Architecture of the Intuity™ Response Application Programming Interface (IRAPI) 2, 92-101
 Architecture: major logic units of the 1B processor 3, 29-30; SL mediation equipment (SME) 1, 82; VideoPhone 2500® and Picasso® system 5, 82, 83
 Archways 3D visualization system 5, 37
 Arsine 6, 13
 ASCII character set 2, 106; 3, 85, 90
 Assistance Request System, in 1B processor 3, 71
 Asynchronous logic diagrams 5, 112
 Asynchronous transfer mode (ATM): adaptation layers AAL1 and AAL5 5, 75; ATM Forum 4, 41, 43; future features 4, 47-48; general 1, 18 3, 5 4, 25-37, 51 5, 7, 9, 15, 27, 64, 65, 75, 92-94, 96-97, 100-101, 104, 109, 114, 115; interface protocol 4, 38; interfaces 4, 41; network infrastructure 4, 40; switches 4, 44-45; technology and standards, InterSpan® ATM Service 4, 41-42 4, 39-47; to the desktop 4, 25-37
 Asynchronous transfer mode-based platform for multimedia services 5, 106-116
 AT&T's Environmental Goals and Guidelines 6, 6
 AT&T's Environmental Policy 6, 6
 AT&T's Environmental Vision 6, 6
 AT&T:
 1B processor 3, entire issue
 3B2/622 processor 2, 105
 5665 ATM machine 4, 16
 5ESS® central office switch 3, 16 5, 88 6, 5
 6386 computer 2, 110
 7500 series, integrated services digital network (ISDN) phones 4, 96
 800 service 3, 10
 800 Speech Recognition Service 2, 45, 53
 8510 ISDN telephone 5, 88, 89
 Advanced Technology Systems (AT&T-ATS) 4, 4 5, 75
 Allentown, Pennsylvania, manufacturing location 6, 31
 Approach to technology and the environment: environmental vision, environmental policy 6, 4, 6
 BaseWorX™ software development package 2, 106 3, 89
 Bell Laboratories: and photovoltaics 6, 46; and terpene hydrocarbon 6, 63; and water-soluble flux 6, 63; general 5, 48-50, 52; intelligent agent research 5, 70, 71; repeaterless transmission 1, 100
 Business Communication Services (AT&T-BCS) 5, 39, 49, 52, 58
 Champions of the Environment 6, 42
 Communications Services Group (AT&T-CSG): 3, 4, 18; integrated test lab 3, 18
 Consumer Laboratory 5, 42
 CONVERSANT® Voice Information System 2, 46, 53
 Custom Electronic Systems 5, 43
 Customer Education and Training organization (CENT) 3, 43
 Datakit® applications package (DKAP) 2, 106-110
 Datakit® virtual circuit switch 4, 78, 79
 DEFINITY® G3 Expert Agent Selection (EAS) feature 4, 64, 66
 DEFINITY® PBX 5, 88
 Documentation Development Organization (DDO) 3, 43
 DSP32C 2, 19
 EasyLink® business unit 6, 49
 EMMI™ multimedia network interface
- AT&T (*continued*):
 5, 75, 77
 Energy use 6, 44-53
 Environmental goals and guidelines 6, 4, 6
 Environmental policy 6, 4, 6
 Global Business Communications Services (AT&T-GBCS): general 5, 39, 46, 49-50, 52; voice messaging products 2, 92
 Global Business Communications Systems (AT&T-GBCS) 4, 64
 Global Information Solutions (AT&T-GIS): general 4, 16 5, 46, 49, 54, 60 6, 13; manufacturing operation 6, 72; Workstation Products Division (WPD), Augsburg, Germany 6, 72-78
 Global Supply Line Management (AT&T-GSLM) 3, 58
 Global VideoPhone Service licensee 5, 84
 Globalyst™ 360TPC 2, 61
 GlobeView®-2000: ATM Switch 5, 109; Broadband System 5, 12
 HFC 2000™ system 5, 13
 IBAC System 2, 32
 IBAC/IBRC system 2, 29
 ImagiNation Network 5, 12
 Interactive Video Network (IVN): general 5, 92-105; network architecture 5, 93; purpose 5, 93-95
 Interchange Computing® 5, 58
 Intuity™ CONVERSANT® system 2, 46 5, 58
 Maintenance services 1, 65
 Merrimack Valley Works 6, 29
 Microelectronics: AVP4000 chip set 5, 88; general 2, 19 5, 12 6, 33; high-speed chip set 5, 82; video-codec chip set 5, 4
 Model Safety Program 6, 41
 Multimedia portfolio 5, 11
 Multimedia solutions for businesses, consumers, service providers 5, 11, 12
 Network NotesSM service 5, 11
 Network Operations Center 3, 46
 Network Services 3, 49
 Network Services Division (AT&T-NSD) 3, 10, 29, 34, 37, 40, 41, 61
 Network Systems (AT&T-NS) 3, 29, 40, 49 5, 4, 9, 125 6, 61
 Network Systems Group (AT&T-NSG) 3, 4, 18
 Network Systems Power Group 6, 50
 Ocean systems, history of 4, 5
 OneVision™ platform 4, 47

AT&T (continued):

Patent Recognition Award, 1995 4, 64
 Phone Centers 6, 21
 QuiteQuiet™ Acoustic Echo Canceler 2, 67, 68
 Richmond Works 6, 12
 Safari® laptop computer 2, 110
 Service Centers 6, 55
 Signature Series telephones 6, 21
 Speakerphone 870 2, 61, 67
 Submarine Systems Inc. (AT&T-SSI) 1, entire issue
 Submarine Systems, Inc.: repeaterless products 1, 100; system assembly testing 1, 88-89
 SYSTIMAX® product line 4, 26
 T7525 linear codec 5, 83
 TalkBak™ loudspeaker/microphone 2, 61
 Technology and the Environment 6, entire issue
 Teradata® Database System 5, 55
 Training Center 3, 56
 TrueVoice® service 2, 87
 Video Manager 5, 12, 124
 VideoPhone 2500® 5, 78, 79, 83
 Vistium® Personal Video System 2, 67 5, 56
 Voice Recognition Call Processing (VRCP) 2, 45, 52
 Witness Simulation Package 3, 52
 WorldWorx™ Solutions 5, 11, 39, 90; Network Services 5, 4
 XUNET-II experimental network 5, 42
 "AT&T Directory on the Internet" 2, 3
 "AT&T Policy for Environmental Protection": 1990 6, 37; 1994 6, 38
 AT&T Switching Evolution Challenge, The 3, 6-9
 AT&T's Autoplex® System 1000 mobile switching center 4, 88
 AT&T-GIS see AT&T Global Information Solutions
 AT&T/Amati IBOC System 2, 32
 AT* (Hayes compatible) command set 2, 77
 Atlantic Cable Maintenance Agreement (ACMA) 1, 65
 ATM-Based Platform for Rapid Generation of Multimedia Applications, An 5, 106-116
 ATM Forum 4, 36
 ATM see Asynchronous transfer mode
 ATMs see Automatic teller machines
 ATS product realization process (PRP) 4, 14
 Attenuation 1, 37, 38
 Audible feedback, DEFINITY® PBX system 4, 69
 Audio and voice processing 2, entire issue
 Audio business services 2, 32
 Audio for videoconferencing (AVC) 2, 66
 Audio Technology Used in AT&T's Terminal Equipment 2, 57-70
 Audio/visual server (AVS) 5, 55, 63-65

Audio: CD-grade 2, 24; coder performance, measuring 2, 24; coding 2, 24; compression technology and applications 2, 23, 25; processing 2, 23; quality, three dimensions of 2, 23; random-access memory (ARAM) 2, 76; signals, subclasses 2, 23; storage and recording 2, 32
 Audiovisual signal processing: coding 5, 14-20; digital audio formats 5, 15; digital television formats 5, 15; high-definition television (HDTV), coding, bit rate 5, 20; image and speech synthesis 5, 15, 20-21; machine recognition, speech and image signals 5, 15, 21-22; movies on demand, coding, bit rate 5, 20; signal compression 5, 15-20; videoconferencing bit rates 5, 20
 AUDIX® system 2, 7
 AUDIX® voice messaging coder (VMC): speech coders 2, 14-22
 Automatic call-type processing, speech recognition 2, 52
 Automatic speech recognition 2, 45-56, 81-91
 Automatic teller machines (ATMs): general and new generation 4, 16
 Auxiliary unit bus 3, 16
 Avalanche photodiode (APD) 1, 55

B

Back cavity, loudspeakers 2, 63
 Back-out procedures 3, 15
 Backbone system, high-capacity 1, 12
 Background block error ratio (BBER), submarine cable 1, 30
 Baker, Albert D. 4, 94-102
 Baltimore training center 1, 72
 Baral, Elliott 3, 18-27
 Barge in 2, 46, 52, 53, 84, 87 5, 41
 Barrel effect 2, 57
 BaseWorX™ software development package 2, 106 3, 89
 Basic rate interface (BRI) lines 4, 94-102
 Bass-reflex system, loudspeakers 2, 63
 Batteries 6, 47, 49, 67, 69
 Baum-Welch algorithm 2, 49
 Baumhauer, Jr., John C. 2, 57-70
 bb 5, 35
 Beacken, Marc 5, 68-77
 Beamforming 4, 9
 Bell 103 modem 5, 24
 Bell 212A modem 5, 24
 Bell Laboratories' Storage System (BeSS) 5, 61
 Bell Laboratories, intelligent agent research 5, 70, 71
 Bell South 5, 8
 Bell System 6, 15
 Berkley, David A. 5, 34-45
 Beryllium-copper (BeCu) housing 1, 34, 36, 37
 Best Current Practices 3, 8, 29
 Best-fit skills matching 4, 67
 Betta, Carl E. 3, 7, 10-17, 28-29
 Beyler, Eric R. 5, 106-116

Bias reduction 2, 53
 Bidirectional/unidirectional channel 2, 66
 Bight 1, 61
 Binary search 4, 61
 Bit error rate (BER), estimation of 1, 25
 Bit manipulation unit (BMU) 2, 73, 77
 Block-error flag 2, 31
 Blocking ratio 4, 55, 56
 Board grading 3, 57
 Boddie, James R. 2, 71-80
 Bonepile recovery 3, 57
 Borum, John C. 6, 36-43
 Boss, Catherine 5, 54-67
 Bottom-profiling sonar system 1, 66
 Boundary-scan testing 2, 73
 Bow sheave 1, 65
 Bow thrusters 1, 66
 Branching unit 1, 62
 Branching units (BU), submarine cable 1, 20, 33, 40, 50, 51, 58
 Broadband integrated services digital network (B-ISDN) 4, 30-32, 51
 Broadband networks, bandwidth requirements 5, 8
 Broadband technology 5, 7
 Build-ahead stock 3, 50, 51
 Bullard, Glenn S. 3, 61-72
 Burst interleaving 2, 77
 Business Communications Services (AT&T-BCS) 5, 58
 Business multimedia services, Communications Programs for Advanced Switched Services (COMPASS) 5, 125-128
 Business Roundtable, and pollution study 6, 40

C

C program language 2, 106
 C programming language, for application program interface (API) 2, 93
 C++ programming language: for application program interface (API) 2, 93; general 5, 56, 107
 Cable Administration System 1, 81
 Cable control room (CCR), undersea cable-laying ship 1, 66
 Cable data instrumentation system (CDIS), undersea 1, 66
 Cable equipment, modular undersea 1, 69
 Cable fault isolation, IB processor 3, 33
 Cable faults 3, 42
 Cable highway 1, 65
 Cable routes, instrumented 3, 76
 Cable ships, second generation 1, 65
 Cable ships: Dock Express 20 (DE-20) 1, 69; full-size 1, 63; *Global Link* 1, 61, 65-67; *Global Mariner* 1, 66-67; *Global Sentinel* 1, 66-67; mini 1, 63
 Cable systems, undersea: AT&T SL280 1, 8, 71; AT&T SL560 1, 9; AT&T SL2000 1,

- 13, 71; TAT-6 1, 70; TAT-8 1, 8, 71; TAT-9 1, 71; TAT-11 1, 72; TPC-4 1, 72
- Cable television (CATV) 5, 7, 9
- Cable transporting machines (haulers) 1, 61
- Cable types, undersea 1, 60
- Cable, land 1, 61
- Cable, special-application undersea 1, 62
- Cable-to-cable junctions (CCJs), underwater 4, 8
- Cablevision Systems Corp. 5, 4
- CAIP *see* Computer Aids to Industrial Productivity
- Calculating signal-to-noise ratio (SNR), submarine cable 1, 29-31
- Call centers 4, 64
- Call Management System (CMS) 4, 65
- Call store 3, 11
- Call-routing algorithms, improving 4, 66
- CAMIL2 interface logic chip 5, 83
- Cancellation technique 4, 29
- Candidate characters 4, 22
- Canned functions, software 2, 105
- Carbon dioxide, emissions 6, 44, 45
- Cardiodirectivity 2, 58-60
- Caribbean undersea cable system, 1994 1, 83-84, 88-91
- Cariño, Felipe 5, 54-67
- Carrierless amplitude modulation/phase modulation (CAP) 4, 29-31, 35, 36
- Carrierless amplitude modulation/phase modulation: 2 constellation points (2-CAP) 4, 33; 4 constellation points (4-CAP) 4, 33; 16 constellation points (16-CAP) 4, 31-33, 36
- Cathode ray tube (CRT), with phosphors 6, 67
- CATV *see* Cable television
- CAV *see* Courtesy amount verification
- CCITT G.722 standard 2, 25
- CD-ROM 5, 71
- CD-ROM-based training 5, 57
- Cellular network service: hierarchical, description 4, 85; overview 4, 85-87
- CELP algorithm 5, 83
- CELP+ algorithm 5, 83
- Center clipping echo chip 2, 66
- Center for Devices and Radiological Health (CDRH), U. S. 1, 19
- Centers of Excellence, GSLM 3, 58
- Central-processor-unit (CPU) chips 3, 16
- Centralized power 6, 44-46
- CENTREX services: general 5, 50; single-line configurations 4, 95, 102
- Cepstral: bias removal algorithm 2, 51; filtering 2, 47; mean normalization 2, 51; mean substitution 2, 51; normalization 2, 51, 53
- Cepstrum 2, 47
- Certification testing, undersea cables 1, 26
- CFCs *see* Chlorofluorocarbons
- Change control, 1B processor 3, 32
- Channel delay, speakerphones 2, 66
- Channel impairments, broadcasting-signal 2, 28
- Character recognition and segmentation, simultaneous 4, 21
- Character segmentations, "legal" string 4, 21
- Character set 3, 85
- Chemical hydrides fuel cells 6, 50
- Chemical plants 6, 77
- Chen, Edward Y. 2, 23-34
- Chen, James 4, 94-102
- Chen, Juin-Hwey 2, 14-22
- Chevrolet* 5, 108
- Chien, Ta-Mu 1, 60-74
- Chip aging, in lasers 1, 26
- Chlorinated solvents 6, 11
- Chlorofluorocarbons (CFCs): elimination of 6, 38, 39, 41, 42, 63, 65; general 6, 11, 14
- Choi, Jae H. 6, 21, 54-60
- Choudhury, Gagan L. 4, 50-63
- Chromatic dispersion: general 1, 37; transmission fiber 1, 93-102, 95-98
- Church, Kenneth, algorithm 2, 37
- Circuit-feature size 2, 74
- Circuit-pack functional test (CPFT) 3, 54-58
- Circuit-switched networks, classes of service 4, 50, 51
- Clarisse, Olivier B. 5, 106-116
- Clark, Edward A. 5, 106-116
- Class objects 5, 56
- Class of customer: cost of 4, 58, 59; general 4, 52-54, 56, 58, 59
- Cleaning systems, electronics: semi-aqueous, aqueous, carbon dioxide pellet and snow 6, 12
- Client/servers, and multimedia services 5, 54-67
- Close-talking microphones 2, 57, 63, 64
- Cluster redesign 4, 13
- CMS *see* Call Management System
- CNN* television news 5, 57
- Coal combustion 6, 45
- Coaxial systems, power for 6, 45
- Code-excited linear production (CELP) algorithm 2, 20-21 5, 83
- Coded-character sets 3, 85
- Coders/decoders (codecs) 2, 72
- Coding: digital audio 2, 6; perceptual 5, 19; speech, adaptive differential pulse code modulation (ADPCM) 5, 29; speech and audio 2, 5; standards, speech, audio, image, and video 5, 18
- Coffield, Don R. 4, 38-49
- Coherent optical time-domain reflectometer (COTDR) 1, 36, 51, 78
- Cole, Robert G. 4, 38-49
- Collaboration: server 5, 59, 60; services 5, 59, 60
- Columbus II Cable System 1, 2-3, 24, 41
- Columbus Quality Information System 3, 59
- Columbus-II B segment, SL2000 undersea lightwave cable system 1, 91
- Comb filtering 2, 68
- Command set, AT* (Hayes-compatible) 2, 77
- Commercial processors 3, 15
- Common management-information service element 1, 79
- Communication networks, undersea; domestic (intra-country) 1, 12
- Communication systems, undersea 1, 75
- Communication technologies, multimedia services: asynchronous transfer mode (ATM) 5, 15; customer premises 5, 28-29; industry activity, public switched telephone network (PSTN) 5, 24-25; integrated services digital network (ISDN) 5, 15; standards activity, PSTN 5, 24; simultaneous voice and data (SVD) 5, 15; switched network 5, 23-24; voiceband modem technology 5, 24
- Communication: any-time 2, 5; anywhere 2, 4; at reasonable cost 2, 5; habitable environment 2, 5; high-quality 2, 4; seamless 2, 4
- Communications driver, multimedia 5, 57
- Communications Services Group: general 3, 18; integrated test lab 3, 18
- Commuting 6, 14
- Compaq Presario* computer 2, 61
- Compilers 2, 75
- Complete flag 5, 63
- Complete partitioning (CP) 4, 53-63
- Complete sharing (CS) 4, 53-63
- Component software, reuse of 5, 106-116
- Compression technology 5, 8
- Computer Aids to Industrial Productivity (CAIP) Center 5, 42, 43
- Computer and Business Equipment Manufacturers Association (CBEMA), power recommendations 6, 45
- Computer workstation products, environmental 6, 78
- Computer-aided design (CAD) 2, 76
- Computing Science Research Center, Bell Labs 2, 3
- Computing, distributed 4, 74-84
- Comrie, Paul Reaves 6, 17-25
- Conditional blocking requirement 4, 53-55
- Conference of European Post and Telecommunications (CEPT); CEPT-4 interface 1, 17, 18
- Connected components analysis 4, 21
- Connected-digit speech recognition 2, 53
- Connectivity, fiber-optic 1, 8
- Constant bit rate (CBR) services 4, 41, 47
- Constant-quality mode 2, 26
- Constant-rate mode 2, 26

Construct, software 5, 107
 Consumer Reports 2, 86
 Containerized cable transport 1, 69
 Containers, International Organization for Standardization (ISO) 1, 69
 Content, software 5, 107
 Context-dependent modeling 2, 49, 50, 53
 Control arithmetic unit (CAU) 2, 72
 Control flow diagrams 5, 112
 Control functions, MNP-10* 2, 77
 Control, linear cable engine 1, 69
 Convergence: functional, competitor, technology 5, 8
 CONVERSANT® interactive voice information system 2, 44, 53
 CONVERSANT® system Home Agent® software feature 4, 66
 Conversion processor chip 2, 76
 Convolutional decoding 2, 77
 Coordinate-convex sharing policy 4, 59
 Copper: in flux 6, 64, 66, 68; recovered 6, 68
 CORAL directory service 5, 37
 Corporate product realization group (CPRG) 3, 55
 Corporate Product Realization Process (CPRP) organization 3, 65, 67-68
 Cosky, Michael L. 2, 81-91
 Cost of information management 6, 15
 Cost: stranding, per-switch 3, 13
 Courtesy amount verification (CAV): check-reading process 4, 18; general 4, 18, 20, 21
 Cox, Richard V. 2, 14-22
 Craft-interface terminals (CITs) 1, 79
 Crawford Hill power test 6, 49, 50
 Critical bands in hearing 2, 25
 Crochiere, Ronald E. 2, 71-80
 Crosstalk: far-end 4, 28, 29; general 4, 28; near-end 4, 28, 29, 32, 33; near-end suppression 4, 33
 Crouch, Paul E. 5, 78-91
 Custom processor 3, 16
 Customer Network Management System 4, 41, 45-47
 Customer premises equipment (CPE): general 5, 109, 110, 114; switches 4, 94-95, 101-102
 Customer premises, transmission systems: fiber distributed data interface (FDDI) 5, 28, 29; local area network (LAN) 5, 28; private branch exchange (PBX) 5, 28
 Cryogenic near-field scanning optical microscope 1, 3

D

D'Anjou, Louis O. 6, 21, 54-60
 d-limonene 6, 63
 Dambach, Barry F. 6, 36-43
 Danish government 6, 13, 78
 DAR: standard, EIA-NRSC contest for 2, 31; systems, in-band 2, 28; technology 2, 27
 Data and application sharing 5, 78
 Data arithmetic unit (DAU) 2, 72
 Data flow diagrams 5, 112
 Data-asynchronous polarization scrambling 1, 41
 Data-grade cable 4, 26
 Data-synchronous polarization scrambling 1, 41
 Database platform, UNIX*/ORACLE* 1, 81
 Datakit® applications package (DKAP) 2, 106-110
 Datakit® virtual circuit switch 4, 78, 79
 Davis, John H. 3, 4-5
 DeCaluwe, Craig L. 3, 33, 37, 40-48
 Decision feedback equalizer (DFE) 4, 34
 Dedicated function allocation approach 4, 78
 Deep water (DW) submarine cable 1, 39, 50
 DEFINITY® telecommunications system: G3VS 5, 51; general 2, 19, 92; private branch exchange (PBX) logic 5, 51
 DEFINITY®: Administration WithOut Hardware (AWOH) feature 4, 71; AUDIX® voice mail system 2, 19-20; Automatic Call Distribution (ACD) 4, 64; Call Centers 4, 66; Call Forwarding 4, 71; call-forwarding destination 4, 72; Call Vectoring feature 4, 67; EAS realization 4, 71; G3 Version 2 communications system 4, 65; System 75 and System 85 private branch exchanges (PBXs) 4, 64
 Deloading 3, 12
 Delta cepstrum 2, 47
 Delta-delta cepstrum 2, 47
 DENPORT South Facility, Shreveport, Louisiana 6, 59
 Deployable Automatic Speech Recognition Systems: Advances and Challenges 2, 45-56
 Design and Deployment of Optically Amplified Undersea Systems 1, 83-92
 Design for environment (DFE): compliance costs 6, 11; composite corporate assessment 6, 21-23; general 6, 4, 8, 10, 11, 13, 15, 26, 41, 47, 54, 61, 66, 67, 69, 70; infrastructure 6, 4; market definition and access 6, 13; tools 6, 5
 Design for Environment Attributes of the AT&T 5ESS® Switch 6, 61-71
 Design for recycling (DFR): disassembly design, nondestructive 6, 55-56; general 6, 54-55; plastics, marking properly 6, 56; product end-of-life design solution 6, 55; reassembly design 6, 55-56; recycling inhibitors, avoiding 6, 56
 Design for testability (DFT) 3, 53
 Design for X 6, 61
 Design Guidelines, AT&T 6, 21
 Design Requirements for the Current Generation of Undersea Cable Systems 1, 16-32
 Designing with Plastics: Considering Part Recyclability and the Use of Recycled Materials 6, 54-60
 Desk top/audio only (DTAO) 2, 66, 67
 Desktop conferencing systems, multimedia 5, 46-47
 Desktop, asynchronous transfer mode (ATM) to the 4, 25-37
 Development process, environmental management system (EMS) 6, 75
 DFE see Design for environment
 Diagnostic rhyme tests 2, 6
 Dickinson, David A. 6, 26-35
 diff mark 3, 92
 Differential microphones 2, 61, 63, 64
 Digital audio broadcasting (DAB) 2, 23
 Digital audio radio (DAR) 2, 27
 Digital audio tape (DAT) 2, 24
 Digital audio, CD-quality 2, 6
 Digital compact cassette (DCC) 2, 24
 Digital cross-connecting 1, 82
 Digital signal processing (DSP) 2, 23, 57
 Digital signal processing (DSP) and computing: dedicated very large scale integrated (VLSI) architectures 5, 31; general-purpose DSPs 5, 31-32; general-purpose microprocessors 5, 29-31; multiple instruction-multiple data (MIMD) architectures 5, 32
 Digital signal processor (DSP): accelerators 2, 73; algorithms 2, 75; applications and market segments 2, 76; application-specific 2, 71, 76; computational speed 2, 72; consumer technology applications 2, 76; core 2, 72; customization design approach 2, 74; design modularization and core-based design 2, 74; early applications of 2, 71; features 2, 72; for acoustics 2, 64-69; general 2, 71-80; hardware architecture 2, 72; hardware trends and directions 2, 74; high-level language support 2, 75; instruction set 2, 75; I/O interfaces and test ports 2, 73; memory, types of 2, 73; modem applications 2, 77; modular design approach 2, 74; multimedia architectures 2, 78; power management 2, 73; software and hardware development tools 2, 75; software architecture and development 2, 75; software modularization and control 2, 75; wireless telecommunications applications 2, 76
 Digital simultaneous voice and data (DSVD) applications 5, 81
 Digital telephony, toll- or network-quality 2, 24

- Digital to analog (D/A) 2, 72
 Digital video home terminal (DVHT) 5, 121-125
 Digitization 5, 7
 Digitized audio, low-bit-rate 2, 24
 Dimension[®] PBX 4, 64
 DIN/ISO 9000 audit series standards 6, 72-78
 Dipole directivity 2, 58-60
 Direct memory access (DMA) 5, 73
 Directional azimuthing stern thrusters 1, 66
 Directional microphones 2, 57-60
 Directivity pattern microphone 2, 58
 Discrete cosine transform (DCT) 5, 73
 Discriminative training, speech recognition 2, 49
 Disk latency 5, 64
 Disk seek latency 5, 65
 Disney Enterprises' *Alice in Wonderland* system 5, 41
 Disney* 5, 8
 Dispersion compensation 1, 52
 Dispersion-shifted fiber (DSF) 1, 16, 24, 29, 50, 53-55, 57
 Distributed computing, corporate 4, 74-84
 Distributed power 6, 46, 47-50
 Distributed power storage 6, 47-50
doc 5, 35
 Domain vocabulary 5, 111, 112
 Doped silica fiber 1, 21, 22
 Doran, Robert L. 5, 68-77
 Double armored (DA) submarine cable 1, 24, 39, 50
 Double switching 3, 14
 Double-ended power submarine cable 1, 28
 Double-talk detector 2, 65
 Doubly stochastic process 2, 49
 Dowden, Douglas C. 3, 28-39
 Downtime 3, 15
 Drakopoulos, Elias 4, 74-84
 Draper, Clifton W. 6, 26-35
 Draw-off/hold-back (DOHB) linear machine 1, 65
 Drum cable engine (DCE) 1, 65
 Dry plant, submarine cable 1, 19, 24, 33, 48
 DSP16A digital signal processor 5, 82, 83
 DSP3210 processor 5, 83, 88
 DSP *see* Digital signal processor
 DSVD applications 5, 81, 89
 Dual V.35 interface 5, 88
 Dual-tone multifrequency (DTMF) 2, 76
 Dynamic non-hierarchical routing (DNHR) 3, 4
 Dynamic positioning system 1, 66
 Dynamic random access memory (DRAM) 5, 73
 Dynamically cloning 5, 65
 Dynamometer 1, 66
- E**
- E2A telemetry system 3, 20
 Ear cavity impedance 2, 64
 Early, Scott H. 2, 57-70
 Earth potentials 3, 75
 Easton, Robert L. 1, 16-32
 EC-7* 6, 63, 64
 Echo control 2, 57, 58, 64
 Echo path length (EPL) 2, 65
 Echo path linearity 2, 67
 Echo-cancellation and suppression system 2, 12
 Eco-labels 6, 36, 37
 EDFAs (erbium-doped fiber amplifiers) 1, 93-102
 Edge device 5, 75
 Edgepoint device 5, 75
Efficiently Providing Multiple Grades of Service with Protection Against Overloads in Shared Resources 4, 50-63
 Eickmeyer, John R. 4, 4-15
 Electrical echo canceler (EEC) 2, 64, 65, 66
 Electrical echo estimate 2, 65
 Electrical echo path (EEP) length 2, 65
 Electrically erasable ROM (flash memory) 2, 74
 Electrostatic discharge (ESD) 6, 67, 69
 Electroacoustical techniques 2, 57
 Electroacoustics 2, 12
 Electromagnetic fields (EMFs) 6, 46
 Electromechanical relays 3, 10
 Embedded software architecture 3, 88
 EMMI multimedia network interface 5, 75, 77
 EMS/QMS, single system 6, 73
 Enabling elements 1, 10
 End-of-pipe approach to environmental mitigation 6, 9, 11, 14
 Endpoint device 5, 75
 Endpoint vendors: Apple* 5, 49; AT&T Global Information Solutions (GIS) 5, 49; IBM* 5, 49; Intel* 5, 49; Sun Microsystems 5, 49
 Endpoints: integrated services digital network (ISDN) 5, 50; vendors 5, 49
 Energy consumption 6, 77
 Energy management and AT&T 6, 44
Energy Management and the Environment 6, 44-53
 Energy Star eco-label 6, 14
 Energy, reducing the use of 6, 77
Engineering and Economic Issues in Managing the Paradigm Shift in Computing Environments 4, 74-84
 Enhanced multimedia services, and intelligent agents 5, 68-77
 Enhanced state diagrams 5, 112
 Ensor, J. Robert 5, 34-45
 Entertainment and diversions 5, 10
 Environment and energy use 6, 44-53
 Environment-related issues, identifying 6, 74
Environmental Certification of AT&T-GIS in Augsburg, Germany 6, 72-78
 Environmental competence 6, 13
 Environmental concerns, most serious 6, 9
 Environmental goals, AT&T 6, 36-43
 Environmental improvements in AT&T products 6, 5
 Environmental Management and Audit Scheme (EMAS) 6, 78
 Environmental management system (EMS) 6, 72-78
 Environmental matrix scores, AT&T: combined 6, 22; composite target plot, AT&T products 6, 23
 Environmental Protection Agency (EPA) 6, 42, 63
Environmental Requirements & Guidelines 6, 75
 Environmental stress screening (ESS) 3, 53, 54
 Environmental stress screening/environmental stress testing (ESS/EST) 3, 32
 Environmental stress test (EST) 3, 53-56
 Environmentally friendly 6, 73
 Environmentally Responsible Product Matrix evaluation tool: general 6, 17, 21, 23-24; recommended activities 6, 24
 EPA Energy Star eco-label 6, 14
 Epting, Bryson E. 4, 4-15
 Equipment inventory system, undersea facility 1, 81
 Equipment, modular cable handling; undersea 1, 63
 Erbium-doped fiber (EDF) 1, 25, 33, 35, 36, 53
 Erbium-doped fiber amplifiers (EDFA) 1, 4, 16, 21, 22, 24-27, 33, 49
 Erlang B distribution 4, 90, 92
 Erlang loss model 4, 50
 Error concealment 2, 30
 Error correction coprocessor (EECP) 2, 77
 Errored seconds ratio (ESR), submarine cable 1, 30
 ESS/EST *see* Environmental stress screening/environmental stress testing
 Essential System Maintenance course 3, 42
 Ethernet* 4, 27, 78, 79
 European Global System for Mobile Communications (GSM) 2, 76
 European Union 6, 19
 Evolution of the AT&T network, and the 1B processor 2, entire issue
 Exhaust relief, switch 3, 12
 Expansion factor, software 5, 107
 Expected capacity used, concept 4, 58
 Expert Agent Distribution 4, 66
 Expert Agent Selection (EAS): customer's implementation 4, 70; determining the agents having the necessary skills 4, 71; determining the needs of an incoming call 4, 71; features and benefits 4, 66, 67; general 4, 64; logical agent 4, 69; Logical Agent concept 4, 66; logical agent, implementing 4, 71; primary- and secondary-

skill agents 4, 71; primary- and secondary-skill groups 4, 71; reasons for developing 4, 66; skills matching 4, 65, 67, 71
 Extensible federated relational database coordinator 5, 60
 External memory interface (EMI) 2, 73
 External requirements, environmental management system (EMS) 6, 74

F

Facilities Systems (FS) operations system 2, 108, 109
 Facility provisioning, undersea 1, 82
 Failure in time (FIT) 3, 41
 Failure mode analysis (FMA) 3, 53, 58
 Faraday loop 3, 83
 Fast Fourier Transform (FFT) 2, 27
 Fastar[®] telecommunications services 4, 43
 Fastech* circuit pack 3, 53
 Fault location, restoration, repair; undersea: terminal 1, 77; wet-system 1, 77
 Fault prevention, 1B processor, procedural errors 3, 28-29
 Fault recovery design, development, and testing, in 1B processor 3, 34-37
 Fault-screening process 3, 45
 Feature size 2, 74
 Feature specification document (FSD) 3, 21-26, 43, 46
 Feature-regression tests 3, 45
 Federal Communications Commission (FCC): Class A and B regulations, 4, 29, 32; electromagnetic interference (EMI) 5, 28; general 4, 26, 28; Video Dialtone requirement 5, 92-93, 96-97, 123
 Federated database 5, 61
 Feedback regarding MCC reliability 3, 43
 Ferret document system 5, 43
 Festoons, non-repeated 1, 63
 Fiber amplifiers, erbium-doped 1, 78
 Fiber data distributed network 4, 78, 79
 Fiber systems, power for 6, 45
 Fiber-optic products, undersea: third-generation 1, 10
 Fiber-optic systems, undersea 1, 8
 Fiber-switched branching unit (BU), submarine cable 1, 40, 50, 51
 Fiber-to-the-curb systems 5, 7
 Field-programmable gate array (FPGA) 5, 107
 Fikus, John H. 2, 57-70
 File formats 5, 85
 Finite impulse response (FIR): filtering 5, 74; general 2, 69
 First field application (FFA) switch 3, 46
 First-customer expected cost, customer access 4, 59
 First-order differential (FOD) microphone 2, 60, 61, 63
 FIT rate and values 3, 42
 FitzGerald, Cary W. 2, 92-101
 Five nines reliability 3, 15
 Fixed Distributed System—Underwater Segment (FDS-UWS): general 4, 5, 7; integrated product teams (IPTs) 4, 11
 Fixed Distributed System (FDS) components: passive variable reluctance hydrophone; cluster 4, 9, 11; development process 4, 9; functional allocation of performance 4, 9; overview 4, 7; program development-process successes 4, 11; project 4, 4; technical challenge 4, 7; the need for re-engineering 4, 9
 Flash memory 2, 74
 FlashDSP chip 2, 75
 FlexTalk software system 2, 44
 Flow batteries 6, 47
 Flow Through Data Manager II, customization of 2, 102-110
 Flux 6, 63, 64, 67, 69
 Fluxgate magnetometer, three-axis 3, 77
 FLX[®] Switched Digital Video 5, 13
 Flynn, Lisa A. 3, 49-60
 Flywheels 6, 47, 49
 Focus Prime design transfer tool 3, 57
 Food and Drug Administration, U. S. 1, 19
 Ford, Henry 5, 107, 108
 Forward error correction (FEC): general 1, 95, 100; submarine cable 1, 16, 22, 29, 41, 49, 50, 52, 53, 55, 56
 Four-wave mixing in fiber 1, 96-98
 Fourier transform: general 4, 32; of log-spectrum 2, 47
 Fourier-series method 4, 59
 FR-4 6, 68
 Fractionally spaced linear equalizer (FSLE) 4, 34, 35
 Frequency of occurrences 2, 50
 Frequency-domain masking 2, 26
 Front-end software architecture 3, 89
 FS1016 (Federal Standard 1016) 2, 16
 FSD *see* Feature specification document
 FT-2 project, and quick prototyping 2, 102-110
 Fuel cells 6, 45, 46, 49, 50
 Functional system test/environmental stress test (FSTEST) 3, 54
 Functionality economy 6, 15
 Future Directions for Undersea Communications 1, 93-102
 Future processing architecture 3, 16

G

G.782 1, 54
 G.783 1, 54
 G.784 1, 18
 G.7HR-1 1, 54
 G.821 1, 17, 55, 56
 G.826 1, 17, 18, 55, 56
 G4 facsimile algorithm 5, 43
 Game Boy* 5, 5
 Gaussian noise 1, 25
 Gay, Steven L. 2, 57-70
 Geller, Michael J. 5, 68-77
 General Motors 5, 108
 General papers 4, entire issue
 General terminal adapter (GTA) 5, 109
 Generalized probabilistic descent (GDP) algorithm 2, 49, 51
 Geoelectric potentials 3, 73
 Geomagnetic field 3, 73
 Geophysical environment, earth 3, 83
 Geopotential: distributions 3, 79; predictability 3, 80
 Geopotentials, global 3, 77
 German Blue Angel eco-label 6, 10, 13, 14, 74, 78
 German Society for Quality (DGQ) Publication 100-21 6, 73
 Germanium-doped fiber 1, 50
 Germany, and take-back laws 6, 67
 Giro 4, 23
 Glantschnig, Werner J. 6, 21, 54-60
 Gleason, Robert F. 1, 60-74
 Global data dictionary (GDD) 5, 60
 Global fiber-optic infrastructure 1, 10
 Global Information Solutions (AT&T-GIS) *see* AT&T Global Information Solutions
 Global network architecture, undersea: domestic 1, 11; inter-regional 1, 13; regional 1, 12; special application 1, 13
 Global Positioning System (GPS) 1, 62
 Global Supply Line Management (GSLM) 3, 58
 Global System for Mobile Communications (GSM) communities 4, 88
 Global telecommunications network 1, 8
 Global undersea network: first generation 1, 8; second generation 1, 9; third generation, evolving 1, 10
 Global warming 6, 36
 Globalization of software 3, 85
 Globalyst 360TPC 2, 61
 GlobeView[®] 2000: asynchronous transfer mode (ATM) switch 4, 42, 45-46 5, 109; broadband system 5, 94
 Gold, recycled 6, 66, 68
 Golinski, Stanley 3, 61-72
 Gordon-Haus jitter 1, 94
 Government Connection, The 5, 58

GPS, differential 1, 62
 Gradient descent 4, 18
 Gradient microphones 2, 60, 61
 Graedel, Thomas E. 6, 17-25
 Grammar 4, 21
 Granularity 2, 29
 Green Design Tool 6, 26, 27
 Green design, electronics, elements: circuit pack design 6, 19-20; design for recycling (DFR) 6, 20-21; design guidelines and tools 6, 21; enclosure or exterior housing 6, 19; materials selection 6, 18-19; product delivery 6, 20; subassemblies 6, 19
 Green Index tool, Windows*-based, AT&T 6, 21, 26
 Green product and process design: general 6, 26-27; Green Design Tool 6, 21, 26, 27
 Green Product Design 6, 17-25
 Green Product Manufacturing 6, 26-35
 Green product manufacturing: general 6, 26-35; on-line system tracking waste generation 6, 26; product life-cycle stages 6, 17-18; rating product manufacturing 6, 26; rating processes 6, 26; real-time process advisor 6, 26; reducing volatile organic compound (VOC) emissions 6, 26; systems approach 6, 26; water conservation and reuse 6, 26
 Green product: design assessment 6, 26; process step assessment 6, 26
 Green Seal 6, 36
 Greenhouse gases, emissions 6, 42, 44, programs 6, 36;
 Greening: AT&T 6, 68, 69; AT&T engineering 6, 61; programs 6, 36; telecommunications industry 6, 69
 Grooming 3, 12
 Groundwater contamination 6, 36
 Guaranteed-minimum (GM) bounds 4, 50-63
 Guiding filter soliton system 2, 2

H

H.221 procedure 5, 81
 H.261 video encoding algorithm 5, 74, 89
 H.263 video encoding algorithm 5, 89
 H.320: general 5, 64; protocol 5, 81; standard 5, 8; videoconferencing product 5, 87
 H.324: protocol 5, 81; standard 5, 89
 Haisch, H. Fred 5, 46-53
 Hand-written characters 4, 17
 Handling, Storage, Transport, and Shipping, DIN/ISO 9001 specification title 6, 77
 Hands-free audio technology 2, 57, 58, 62, 63
 Handset-based audio technology 2, 57, 58
 Hanover Direct 4, 70
 Hardware design, development, and testing, 1B processor 3, 29-32
 Hardware: environment 5, 109; fault

recovery 3, 44
 Harmonic enhancement 2, 67
 Hassler, Kerry W. 4, 64-73
 HAW-1 undersea cables 3, 77
 Hawaiian Interisland Cable System, undersea 1, 12
 Head-body-tail (hybrid) contact-dependent modeling 2, 53
 Hennipen County Medical Center 5, 127-128
 Hermann, Ferdinand 6, 72-78
 Heuristic search algorithm 4, 60
 Hewlett-Packard Corp. 2, 103-105
 Hexavalent chromium, as waste 6, 67
 Hidden layers, neural network 4, 19
 Hidden Markov model (HMM) 2, 49, 50, 68
 Hierarchical database management system 5, 56
 High electron mobility in transistors 1, 3
 High-definition television (HDTV): coding, bit rate 5, 20, 27, 29, 31; general 5, 73
 High-density polyethylene (HDPE) 6, 68
 High-loss loop-back (HLLB): general 1, 76; submarine cable 1, 30
 Hillis, Margaret A. 3, 40-48
 Hirschberg, Julia 5, 68-77
 Holmdel Property Management Group, power test 6, 49, 50
 Horizontal: oversampling 5, 74; subsampling 5, 74
 Host interface (HIF) 2, 76
 Host-centered computing 4, 74-79
 Howling, amplification 2, 66
 HP3070 testing utility 3, 51, 57
 Hsu, Jiunn Carl 3, 5-9, 28
 Human factors: engineering, and speech recognition 2, 82; methodology 2, 83
 Human-machine interface (HMI) 2, 105, 106
 HuMaNet: general 5, 34, 39; human factors 5, 41; text-to-speech synthesis 5, 41
 Hunt group 4, 66
 Hybrid (head-body-tail) contact-dependent modeling 2, 53
 Hybrid context-dependency 2, 50
 Hybrid echo canceler 2, 54
 Hybrid fiber-coax (HFC): architecture 5, 9; general 5, 119-122; multimedia solutions 5, 13; network access technology 5, 92-105; systems 5, 11
 Hybrid silica-core fiber 1, 57
 Hybrid undersea systems 1, 11
 Hydrogen fuel cells 6, 46, 50
 Hydrophone: development 4, 11; general 4, 5; testing and manufacturing tooling 4, 12
 Hypercardioid directivity 2, 58-60

I

I.432 4, 36
 IBM* 5, 11

IBOC systems, double- and single-sideband 2, 28
 IEEE *see* Institute of Electrical and Electronics Engineers
 ImageWebSM 5, 58
 ImagiNationTM Network 5, 5
 Implementation decision record (IDR) 3, 26
 Improvements, channel-coding 2, 29
Improving on the Best: "Like a 1A, Only Better" 3, 28-39
 In-band adjacent channel (IBAC) systems 2, 28
 In-band on-channel (IBOC) systems 2, 28
 In-band reserved channel mode 2, 28
 In-circuit test (ICT) 3, 57, 58
 In-process quality inspection 4, 14
 Incremental entropy 2, 50
 Industrial ecology: definition 6, 10; general 6, 4, 8, 10; paradigm 6, 10
 Industry Standard Architecture (ISA) bus 2, 92
 Information appliances 5, 10
 Information superhighway 2, 6
 Information technology 4, 75-77, 82, 83
 INFORMIX* data management system 2, 105, 106
 Input/output (I/O) interfaces 2, 72
 Installation, non-repeated system; undersea 1, 63
 Institute of Electrical and Electronics Engineers (IEEE): 802-style local area networks (LANs) 4, 41; general 6, 4
 Instruction set 3, 15
 Integrated Information Technology, Inc. 5, 74
 Integrated services digital network (ISDN): 64 kbits/s 5, 25-26, 28; adapter 5, 88; asynchronous transfer mode (ATM) 5, 128; basic rate and broadband 5, 78; basic rate interface (BRI) 4, 94-102 5, 26, 126; calls 5, 39; capabilities 4, 95; deployment 4, 102; general 2, 6, 92 4, 26, 78, 79 5, 7, 15, 64, 80, 93; high-speed digital subscriber line (HDSL) 5, 26; narrowband and broadband 4, 41; power test 6, 48, 49; primary-rate connections 5, 81; primary rate interface (PRI) lines 4, 94 5, 26; terminal equipment (TE1) 4, 94, 96, 101
 Integrated test network (ITN) facility 3, 41, 45
 Integrated test process (ITP) 3, 52, 57
 Integrators, power 6, 51, 52
 Intel*: and pollution study 6, 40; general 5, 9, 11, 71; i860 processor system 2, 27
 Intelligent agents, and multimedia service 5, 68-77
 Intelligent call delivery, 5ESS[®] switch cellular gateway 4, 86-87
 Intelligent data filtering 5, 75
 "Intelligent Memory System for Computers" 1, 2
 Intelligent node 5, 76
 Intelligent object filtering 5, 75
 Intelligibility and subjective quality 2, 6
 Interactive consumer video services: general

- 5, 117-125; residential broadband networks 5, 117-122; sample service, home shopping 5, 124-125; sample service, movies on demand 5, 124; servers 5, 122-124
- Interactive Digital Solutions 5, 9
- Interactive multimedia services 5, 117-129
- Interactive Multimedia Services for Consumers and Businesses* 5, 117-129
- Interactive multimedia television (IMTV) 5, 27
- Interactive TV 5, 9
- Interactive Video Network: An Overview of the Video Manager and the V Protocol, The* 5, 92-105
- Interactive voice calling features, speech recognition 2, 52, 53
- Interchange Computing® 5, 58
- Interconnect cable (ICC), underwater 4, 7
- Interface bus 3, 16
- Interface, Q3 1, 79
- Interim Standard 41 (IS-41) 4, 85, 88-89
- Internal requirements, environmental management system (EMS) 6, 75
- International Electro-technical Commission (IEC) standards 825-1, 825-2, 825-2825-1 1, 19
- International Organization for Standardization (ISO): AT&T standard, marking polymeric materials 6, 56; general 1, 63, 79 5, 80 6, 14, 19, 24, 68, 69; ISO 9000, general 6, 41, 42; ISO 9000, quality requirements 6, 14; ISO 9001, certification 1, 4, 19; ISO 9001/9002, general 6, 72-78; ISO 14000 standard 6, 14, 42, 78; plastic marking codes, ISO-compliant list 6, 56
- International Telecommunications Union (ITU): 802.6 standard 5, 128
- Draft recommendations:
- G. 723 (low bit rate speech coder) 5, 24
 - G. 729 (low bit rate speech coder) 5, 24
 - G. ssvd (low bit rate speech coder) 5, 24
 - H.324 (multiplexer) 5, 24
 - H.326 (video coding) 5, 24
 - H.246 (control channel) 5, 24
 - V.8 bis (capabilities exchange and selection) 5, 24
- General 1, 17, 50
- Q.2931 signaling protocol 5, 100
- Recommendation:
- G.773, G.774 1, 19
 - G.782, G.783 1, 54
 - G.784 1, 18
 - G.7HR-1 1, 54
 - G.821 1, 17, 55, 56
 - G.826 1, 17, 18, 55, 56
- Study Group (SG):
- SG 1 5, 23
 - SG 8 5, 23
 - SG 14 5, 23, 24
 - SG 15 5, 23
- Telecommunications Standardization Sector (ITU-TSS):
- General 1, 40, 54 5, 80
 - H.320 video/audio standards 5, 49-50, 52
 - Low-delay code-excited linear prediction (LD-CELP), 16 kbits/s 2, 19
 - Planned standards 2, 16
 - Recommendation I.432 4, 36
 - Standard I.555 4, 44-45
 - Telephone bandwidth, public switched telephone network (PSTN) video telephony (6.3 and 5.3 kbits/s) 2, 21
 - Toll network coders (G.711, G.721, G.728) 2, 16
 - Toll-quality 16 kbits/s coder 2, 19
 - T. 120 data standards 5, 49, 52
 - T.126 data standards 5, 49
 - V.asvd (simultaneous voice and data) 5, 24
- International telephony standards 5, 80
- Internationalization of software 3, 85-94
- Internationalizing UNIX® Software Projects* 3, 85-94
- Internet-standard: file transfer protocol (FTP) 4, 45, 47; Management Information Base (MIB) II 4, 45-46
- Internet: 800 directory on 2, 3; "archie" 5, 69; general 5, 9, 58, 71; "gopher" 5, 69; "netfind" 5, 69; Softbot 5, 69, 70
- Interoperability 5, 8, 89
- InterSpan® Asynchronous Transfer Mode (ATM) Service: Customer Network Management System 4, 38, 41-42, 45-48; frame-relay-to-ATM protocol conversion service 4, 38, 42-43, 45; general 4, 38-48; Management Information Base (MIB) 4, 45-47; network architecture 4, 42; ReliaBURST™ traffic management method 4, 38, 42-44
- InterSpan® Frame Relay Service: Customer Network Management Service 4, 45-46; frame relay-to-asynchronous transfer mode (ATM) interworking 4, 44-45; general 4, 38, 42-43, 45; service architecture 4, 42-43; Simple Network Management Protocol (SNMP) service 4, 46-47; transport services 4, 43-44
- Intuity™ CONVERSANT®: platform run time 2, 94; voice messaging system 2, 19, 46, 92-101 5, 58
- Intuity™ response application programming interface (IRAPI): architecture 2, 92-100; capabilities 2, 96-98; extensibility 2, 99-100; future directions 2, 100; overview 2, 94-95; software failure and recovery modes 2, 98-99; user applications 2, 95-96
- Intuity™ AUDIX® system 2, 92
- Ionosphere 3, 73
- Ionospheric current system, solar-induced day-side 3, 80
- IRAPI see Intuity™ response application programming interface
- ISA see Industry Standard Architecture
- ISDN Basic Rate Interface Interoperability with Key and Hybrid Systems 4, 94-102
- ISDN see Integrated services digital network
- Isenberg, David S. 2, 14-22
- ISO see International Organization for Standardization
- Isochronous networking 5, 61
- Isolated word, speech recognition 2, 88
- Isopropyl alcohol 6, 63, 64
- ITN see Integrated test network
- ITU see International Telecommunications Union
- Izod recycle 6, 58
- ## J
- Jackel, Lawrence D. 4, 16-24
- Jackson, B. Scott 1, 33-46
- Jayant, Nikil S. 2, 23-34 5, 14-33
- Jersey Central Power and Light (JCP&L) 6, 48, 49
- JIS X 0208-1990 character set 3, 91
- Joint Photographic Experts Group (JPEG) 2, 79 5, 18, 24, 73-75, 83, 85
- Joint Test Action Group (JTAG) 2, 73
- Joining and coupling 1, 71
- Jones, Cynthia C. 4, 64-73
- JPEG see Joint Photographic Experts Group
- Juang, Biing-Hwang 2, 45-56
- Just noticeable distortion (JND) 2, 25
- Just-in-time: manufacturing 6, 8; training 5, 57
- JYACC, Inc. 2, 105
- JYACC: Application Manager (JAM*) 2, 105; procedural language (JPL) 2, 106
- ## K
- Kerfoot, Franklin W. 1, 7, 93-102
- Kerr effect nonlinearity 1, 93, 95, 98, 100
- Key word spotting 2, 46, 51, 52, 84, 87
- Kleinsorge, Peter 6, 72-78
- Kohler, Joylee E. 4, 64-73
- Kokusai Denshin Denwa Co., Ltd. (KDD) 1, 85
- Kordahi, Maurice E. 1, 6, 20, 56, 60-73
- Korean Ministry of Information and Communications (MIC) requirements, wireless network 4, 89
- Korean Mobile Telecom (KMT) Advanced Mobile Phone Service (AMPS) 4, 88-89
- Kroon, Peter 2, 14-22

Kurek, Kathleen A. 1, 6, 20, 75-82

L

L-4 cable 3, 78
LAN *see* Local area network
Land-to-mobile call 4, 88-89
Language identification and translation 2, 11
Language Line 2, 11
Lanzerotti, Louis J. 3, 73-84
Laptop computers, power for 6, 50
Last mile, local loop 5, 7
Laudise, Robert A. 6, 8-16
Lawrence, Victor B. 5, 14-33
LD-CELP *see* Low-delay code-excited linear prediction
Lead-acid batteries 6, 47, 67, 69
Lead: in flux 6, 64, 67; recovered 6, 68, 69
Leading Edge in High-Speed Data Communications Services: The InterSpan[®] Asynchronous Transfer Mode Service, The 4, 38-49
LECs *see* Local exchange carriers
Legacy file systems 5, 56
LeNet character recognizers 4, 19
Leung, Kin K. 4, 50-63
Levendel, Y. H. 5, 106-116
Lewis, John B. 3, 10-17
Libman, Roger E. 5, 92-105
Life-cycle: effects of materials and products 6, 14; environmental implications 6, 4
Light wire armored (LWA) submarine cable 1, 24, 39
Lightweight undersea sensor components (LUSC) 4, 7
Line monitoring equipment (LME) 1, 33, 35, 40, 43, 76
Line monitoring system (LMS) 1, 33, 42, 43, 76
Line terminating equipment (LTE) 1, 24, 40, 41
Line terminating unit 1, 41, 43 (*see also* line terminating equipment)
Linear cable engine (LCE) 1, 65
Linear predictive coding 5, 19
Liquid methanol fuel cells 6, 50
Liss, Jonathan M. 1, 6, 20, 75-82
Lithium bromide 6, 63
Lithium niobate modulators 1, 22
Lively, Barry L. 2, 81-91
Load lines 1, 61
Load-sharing function allocation approach 4, 78
Local area network (LAN): general 5, 6; high speed and switched 5, 7
Local area networks (LANs), IEEE 802-style 4, 41
Local exchange carriers (LECs): general 5, 7, 9, 11; with 4ESS[™] switch 3, 6-7
Local loop interference, echo canceling microphone 2, 64
Local search algorithm 4, 61
Local time (LT) 3, 77

Locale, operating system 3, 85
Localization of software 3, 85
Logical Agent 4, 64
LoginID 4, 65
LoginID_uid field 4, 72
Logue McDonald 324b parametric tester 3, 57
Lombard effects 2, 51
Long conducting installations 3, 73, 74
Loop Maintenance Operation Systems (LMOS) 2, 106, 109, 110
Loop plant power 6, 67
Loopback coupler module (LCM), undersea cable 1, 27, 36
LOTUS 1-2-3* 5, 107
Lotus Development Corp. 5, 9
Loudspeakers 2, 57, 62, 63
Low acoustic impedance receiver (LAIR) 2, 64
Low-delay code-excited linear prediction (LD-CELP) 2, 19-20
Low-solids flux (LSF) 6, 63
Lower layer primitives, software 5, 110
Lynch, Robert L. 1, 6, 83-92

M

Machine recognition, speech and image signals 5, 21-22
MacLennan, Carol G. 3, 73-84
Macroblock differencing 5, 73
Magnetic resonance imaging (MRI) 5, 62
Magnetosphere 3, 73
Main beam, microphone 2, 58-64
Mainframe computing 4, 74-76
Maintenance Center (MC) 2, 108
Maintenance, undersea-system 1, 75
Managed objects 4, 80
Management domains 4, 80-82
Management review and internal audits of quality and environmental issues 6, 74
Management review process, environmental management system (EMS) 6, 74
Manufacturing Issues of the 1B Processor 3, 49-60
Manufacturing: 1B processor 3, 49-60; power for 6, 44-53
Marginal expected cost, customer access 4, 59
Mariano, John 1, 47-59
Markers, prosody 2, 7
Markov chain 4, 54
Marshall, Nelson W. 1, 8-15
Martin, Ronald B. 3, 18-27
Massachusetts Toxic Use Reduction Act (TURA) 6, 28-29
Massively parallel processor (MPP) 5, 54, 55, 61
Master control complex, 1B processor 3, 20
Material reclamation 6, 54
Mathematical resource-sharing model 4, 60
Maximum a posteriori (MAP) adaptation 2, 50, 51
Maximum likelihood method 2, 68
Maybach, Richard L. 1, 83-92
MCC utility processor (MUP) 3, 42
McDonald's Corporation 5, 50-52
McLear III, Robert E. 3, 28-39
Mean opinion score (MOS) 2, 6
Mean time between failure (MTBF) 1, 56
Mean time to repair 3, 43
Measurement techniques, optical amplifier technology: amplifier noise figure 1, 85; system chromatic dispersion measurements 1, 85-86
Medford, Lester V. 3, 73-84
Media playlist 5, 65
Meeting AT&T's Global Environmental Goals 6, 36-43
Meeting Reservation and Control System (MRCS) 5, 50
Memory, structured wafer-based intelligent memory system (SWIM) 1, 2
Mental models 2, 85
Merges, Matthias J. 4, 74-84
MERLIN[®] LEGEND[®] Communications System: benefits 4, 101-102; call processing overview 4, 98-101; configuration 4, 97; general 4, 94-102; overview 4, 96-97; terminal initialization 4, 97-98
MERLIN[®] Communications System 6, 58-59
MERLIN[®] II telecommunications equipment 4, 94
Message catalogs, files 3, 85
Messaging, integrated 2, 5
Metadata database, multimedia 5, 57
Methane, recycled 6, 69
Metrics, DAR testing 2, 31
Meyers, Michael N. 3, 40-48
Micro fuel cells 6, 50
Microelectronics, power for 6, 44-53
Microphones 2, 57-64
Microprocessor, general-purpose 5, 29-31
Microsoft's "Bob" 5, 69
Microsoft Office* 5, 107
Microsoft* 5, 8, 71
Midani, Mowaffak T. 5, 92-105
Middletown, Va., data center, power test 6, 49
Middleware 4, 77 5, 36
Miller, Alan H. 3, 28-39
Millions of instructions per second (MIPS) 2, 72
Mini-disk (MD) 2, 24
Minkus, Gail W. 3, 40-48
MIPS *see* Millions of instructions per second
Mitigation of environmental issues 6, 9
Mixed-data database 2, 51
MJPEG *see* Motion Joint Photographic Experts Group
MNP-10* control functions 2, 77
Mobile Application Part (MAP): and Interim Standard 41 (IS-41) protocols, comparison 4, 88; signaling messages 4, 85-86, 88-89, 92

- Mobile switching center, tandem switch 4, 85-88
- Mobile telephony, power for 6, 50
- MOBITEX* protocol functions 2, 77
- Model-based enhancement by resynthesis 2, 67, 68
- Modem standards, V.34 2, 77
- Modems: Bell 103 5, 24; Bell 212A 5, 24; V.22 bis 5, 24; V.32 5, 24
- Modulation, radio-frequency (RF) 2, 77
- Molecular beam epitaxy 6, 12
- Molten carbonate fuel cells 6, 46
- Monolith microphone 2, 61
- Monopoly 5, 5
- Montage audio/video bridge 5, 37
- Monte Carlo: algorithms 4, 59; feature 4, 13
- Montreal Protocol 6, 11
- MoonBase architecture 5, 60-63
- MoonBase database server 5, 54-56, 60-63, 65
- MoonBeam 5, 62
- Moore's Law 5, 6
- Moosmiller, John P. 2, 92-101
- Morabito, Joseph M. 6, 44-53
- Morgan Irene J. 5, 92-105
- Morrison, Brenda D. 3, 61-72
- Mortenson, Robert L. 1, 6, 21, 24, 33-46
- Mosaic browser 5, 37, 43
- Motif* software 5, 98
- Motion Joint Photographic Experts Group (JPEG) standards 5, 38
- Motion Picture Experts Group (MPEG) 2, 25, 18, 29, 64, 65, 74, 79, 92-92, 122-124
- Motorola 68000* chip 5, 82
- Motorola MC68302* microcontroller 5, 82
- Movies on demand, coding, bit rate 5, 20
- MPEG-2 chip sets 5, 38
- MPEG-2 standards 5, 38
- MR 5, 34, 35
- MRU *see* Multiplexer repeater unit
- MS-DOS* 2, 105, 106, 109 5, 75, 107
- Multi-Function Operations System (MFOS) 3, 85, 89, 91, 93
- Multi-level coding 4, 31, 32
- Multi-style database 2, 51
- Multichannel audio: composite coding 2, 26; general 2, 24
- Multimachine penalty 3, 13
- Multimedia Collaboration* 5, 46-53
- Multimedia collaboration, long-term: access independence 5, 47; media independence 5, 47; model 5, 48-49; platform independence 5, 47
- Multimedia collaborations: application program interface (API) 5, 48; electronic places 5, 47-49; end-to-end communication 5, 46; long-term 5, 47; networking 5, 46-47; remote 5, 46-53; seamless integration 5, 51
- Multimedia Communications Forum 5, 49
- Multimedia Databases and Servers* 5, 54-67
- Multimedia technology 5, entire issue
- Multimedia: 1.5 to 1.7 Mb/s over the local loop 5, 26-27; and asynchronous transfer mode (ATM) 4, 25-37; ATM-based platform 5, 106-116; business customers and consumers 5, 10; Call Server 5, 39; calling concept trial 5, 50; clients 5, 56, 57; customer needs and expectations 5, 9; definition 5, 4, 5; desktop conferencing systems 5, 46; digital signal processing (MM DSP) 5, 72, 73; general 5, 4; hybrid fiber-coax (HFC) 5, 27; hybrid fiber-coax, need for 5, 10; intelligent devices 5, 6; markets 5, 9; module library 2, 78; networking 5, 7; next-generation signals 5, 27-29; objects 5, 54; personal computers 5, 109; platform, technical elements 5, 80; products 5, 10; quadrature amplitude modulation (QAM) 5, 28; quaternary, or quadrature, phase shift keying (QPSK) 5, 28; research platforms 5, 34; server-based architectures 5, 54-67; services 3, 16; services and intelligent agents 5, 68-77; services, 1.5 to 1.7 Mb/s over the local loop 5, 26-27; services, audiovisual signal processing 5, 14-22; services, communication technologies 5, 23-29; services, formal definition 5, 14-15; signals, asymmetric digital subscriber line (ADSL) 5, 27; signals, carrierless amplitude and phase (CAP) 5, 27-29; signals, high-speed digital subscriber line (HDSL) 5, 26; simultaneous voice and data (SVD) 5, 15; software evolution 5, 7; standards organizations 5, 8; systems, evaluation of 5, 39; technical interactions 5, 39; technology enablers 5, 6; value chain 5, 9
- Multimedia: Technology Dimensions and Challenges* 5, 14-33
- Multipair undersea systems 4, 5
- Multiple 1B retrofits 3, 42
- Multiple Listing Service (MLS) 5, 126
- Multiplexer repeater unit (MRU): field 4, 7; function 4, 7; underwater 4, 7
- Multiplexing capability 5, 81
- Multipoint Communication Service (MCS) 5, 50
- Multipoint control unit (MCU) 5, 59, 60
- Munie, Gregory C. 6, 21, 61-71
- Murray Hill ISDN telephony power test 6, 48, 49
- Musical instrument digital interface (MIDI) 2, 79
- Myrick, William T. 3, 61-72
- N
- N-best decoding algorithm 2, 53
- Nalbene, Robert D. 4, 64-73
- Narrowband integrated services digital network (n-ISDN) 5, 47
- National Academy of Engineering 6, 4
- National Center for Supercomputing Activities 5, 43
- National Electronic Systems Assistance Center (NESAC) 3, 41
- National Institute of Standards and Technology 2, 11
- National Television Systems Committee (NTSC): format 5, 88; general 5, 27, 43, 75, 95, 114, 119, 123; video I/O signal format 5, 83
- Natural gas, power test 6, 49, 50
- Natural language approach, and speech recognition 2, 88
- Natural sounding speech 5, 82
- Neal Jr., Robert W., 3, 61-72
- NEBS *see* North American Equipment and Building Standards
- Nemesis: file-access protocols 5, 43; network multimedia information system 5, 34, 43
- Netscape Communications Corporation 5, 43
- Netscape Navigator* 5, 43
- Network elements (NEs) 1, 79
- Network management system (NMS) 1, 79
- Network of networks 1, 13
- Network protection equipment (NPE) 1, 13
- Network Risk Avoidance Program (NRAP) 3, 40, 41, 46
- Network Systems (NS) Affiliate Sales Division project management 3, 71
- Network Systems Group *see* AT&T Network Systems Group (AT&T-NSG)
- Network Systems *see* AT&T Network Systems (AT&T-NS)
- Network Wireless Systems Group 6, 49
- Network, global undersea 1, 63
- Network-centered (distributed) computing 4, 74-84
- Network: access technologies, hybrid fiber-coax (HFC) 5, 92-105; configuration options, undersea, branched ring 1, 14; configuration options, undersea, branched star 1, 13; configuration options, undersea, festoon 1, 14; configuration options, undersea, ring 1, 14; configuration options, undersea, star 1, 13; configuration options, undersea, trunk and branch 1, 14; control points 3, 15; control software 5, 109; database management system 5, 56; grades of service, with overload protection 4, 50-63; management solutions, integrated 1, 78-80; planning and system engineering, undersea 1, 80; service opportunities for audio compression 2, 32; service providers 5, 11; services 3, 49; sharing 4, 54-56; sharing,

asymmetrical 4, 56-58; sharing, symmetrical 4 54-56; switched digital video (SDV) 5, 92-105

Networking: simultaneous voice and data 5, 7; the trend toward 5, 5

Networks, next-generation: fiber to the curb (FTTC) 5, 27; hybrid fiber-coax (HFC) 5, 27; switched digital video (SDV) 5, 27

Networks, undersea: local and regional 1, 63; secondary 1, 63; self-healing 1, 13

Neural network: architecture 4, 19; general 4, 18

"New Version of the S Language" 2, 2-3

Nguyen, Hung Tan 5, 92-105

Nguyen, Mai-Huong 4, 25-37

Nickel batteries 6, 47

Nickel, recovered 6, 68

Nintendo* software 5, 125

Nitrogen inerting, in wave solder 6, 64

No-clean solder flux 6, 63

Noise reduction of video outputs 5, 74

Noise-control system 2, 12

Noise-masking-tone 2, 26

Nominal blocking requirement 4, 53-55

Non-linearity 1, 37, 38

Non-repeated systems, submarine cable 1, 21, 28-29, 47-59

Non-return to zero (NRZ) encoding 4, 31, 32

Nonlinearities, transmission fiber 1, 93-102

Normalized least mean squares (NLMS) 2, 65

North American Equipment and Building Standards (NEBS): general 3, 16; in the 1B processor 3, 32

NRZ (non-return to zero) pulse format: general 1, 93-102, higher bit-rate transmission 1, 95; phase conjugation 1, 95-96, 99

NT2 key, or hybrid system 4, 95-96, 99, 101-102

NTSC *see* National Television Systems Committee

Nuclear power 6, 45

Numerical transform inversion algorithm 4, 59-61

O

O'Dell, Kevin M. 2, 14-22

O'Leary, Thomas M. 3, 49-60

Object identifier (OID) 5, 61

Object index, multimedia 5, 59

Object manager, multimedia 5, 57-61

Object server connectivity (OSC) 5, 61, 62

Object store, multimedia 5, 57, 59, 60

Object-oriented analysis 2, 102-110

Object-oriented database management system 5, 56, 63

Object-oriented technology 3, 16

Object-relational database management 5, 54

Object-relational model 5, 54

Observable Markov model 2, 50

Ocean platforms (cable ships) 1, 60

Ocean tides 3, 74

OCR *see* Optical character recognition

Oil reserves 6, 45

Oklahoma City Works (OCW) 6, 62-67

Oklahoma City Works (OCW), and water soluble flux (WSF) 6, 63

Okrasinski, Thomas A. 6, 44-53

Oldsmobile* 5, 108

Olive, Joseph P. 2, 35-44

Omni-directional microphone 2, 58-60

On-line catalog shopping 5, 68, 71

On-line complex processing (OLCP) 5, 62

On-line transactional processing (OLTP) 5, 62, 64

On-site power 6, 46, 48, 49, 50

On-Site Work Force 3, 41

OneVision™ platform, AT&T's 4, 47

Onori, Craig C. 6, 44-53

ONSI Corporation power test 6, 49, 50

Open Systems Interconnect (OSI) 1, 18

Open Systems Interface (OSI): data link layers (Layer 2) 4, 96-98; network layer (Layer 3) 4, 96; physical layers (Layer 1) 4, 96

Operation and administration, undersea systems 1, 80

Operational DFE projects 6, 5

Operations support systems (OSS) 1, 79

Operations, administration, and maintenance (OA&M) 4, 32

Operations, shore-end 1, 62

Operator Service Position System (OSPS) 2, 52

Optical amplifier (*see* erbium-doped fiber and erbium doped fiber amplifier)

Optical amplifier technology: general 1, 83-92; measurement techniques, development 1, 85-86; system margin, measurement 1, 86

Optical amplifier: first system installation, 1, 88-90

Optical character recognition (OCR): engine 4, 18; general 4, 16 5, 58; technology, overview 4, 17

Optical detectors 1, 3

Optical incremental shaft encoders 1, 68

Optical network unit (ONU), power for 6, 50

Optical pump (*see* erbium-doped fiber and erbium doped fiber amplifier)

Optical signal-to-noise (SNR₀) ratio 1, 30

Optical system testbeds 1, 83-92

Optical time-domain reflectometer (OTDR) 1, 51, 55, 78

Optically amplified submarine repeaters 1, 33-46

Optically amplified undersea systems 1, 83-92

Optimal vector quantizer 2, 51

ORACLE* data management system 2, 105, 106

ORACLE* SQLForm 2, 105

Order wire equipment 1, 40, 41

Orthogonal menus 2, 106, 108

Output metrics associated with the PV process 3, 45

Overboarding a repeater 1, 62

Overload parameter 4, 55

Overload protection, with network grades of service 4, 50-63

Oxides of nitrogen (NOx), emissions 6, 46

Ozone 6, 36

Ozone-depleting substance (ODS) 6, 63, 64

P

Px 64 format 5, 60

Pacific Bell Telephone Company 2, 103, 109

Package aging, in lasers 1, 26

Packaging waste, 5ESS® switch 6, 64, 69

Packet-switched networks, classes of service 4, 51

Packing material: ecologically acceptable 6, 75; general 6, 77

PAL *see* Paradox Application Language format

Pan-American Network 1, 12

Paper recycling, increasing 6, 38, 40

Paper use, decreasing 6, 38, 40

Paper-initiated transactions 4, 16

Paradox Application Language (PAL) format 5, 88

Parallel input/output (PIO) 2, 73

Parallelism and multiprocessing 3, 16

Parameter filtering 2, 47

Parameter sets: G.821, G.826 1, 80

Parameterized control 5, 73

Parameters, undersea cable 1, 66

PARTNER® Communications System 6, 58-59

Partners in Quality Forum 3, 68

Parts recyclability 6, 55

Passive branching unit (BU), submarine cable 1, 40, 50

Passive components, submarine cable 1, 22

Patagonia 6, 13

PBX *see* Private branch exchange

PC/AT* Industrial Standard Architecture bus 2, 27

PCM *see* Pulse-code modulation

Pentium* microprocessor 5, 29-31, 89

Perceptual audio coding (PAC) 2, 23, 25

Perceptual audio coding (PAC): codec prototype, implementation of 2, 26; five-channel decoder 2, 27; stereo decoder 2, 26; stereo encoder 2, 27; variable-rate 2, 26

Perceptual irrelevancy 2, 24

Perchloroethylene 6, 63, 65
 Perdue, Jr., Robert J. 2, 45-56
 Performance management (PM) 1, 80
 Peripheral unit bus 3, 16
 Personal assistants (intelligent agents) 5, 68-77
 Personal communications services (PCS), power for 6, 49, 50
 Personal Computer Memory Card Interface Association (PCMCIA) 5, 122
 Personal conferencing specification (PCS) 5, 60
 PFI *see* Physical fault insertion
 Phase alternate lines (PAL) 5, 114
 Phase conjugation, non-return to zero (NRZ) transmission 1, 95-96, 99
 Phase shift keying (PSK) 2, 30
 Phonemes 2, 35-37, 40-43
 Phosphine 6, 13
 Phosphoric acid fuel cells 6, 46
 Phosphors, in CRTs 6, 67
 Photo-sensors 1, 68
 Photovoltaics (PVs) 6, 44-47, 48, 49
 Physical fault insertion (PFI), in 1B processor 3, 33
 Picasso® system: basic operation 5, 84; general 5, 78, 79, 84-87; markets and applications 5, 86; peripherals 5, 86; video subsystem 5, 83
 Plain old telephone service (POTS) 5, 7, 12, 93, 121
 Plan 9 operating system 2, 3
 Plano 4ESS™ switch 3, 70
 Plastics recycling: general 6, 54-55; program 6, 55
 Plesiochronous digital hierarchy (PDH) 1, 51, 81
 Plesiochronous digital trunks 1, 18
 Point of failure (POF) 2, 31
 Point-source pollution control 6, 41
 Polarization mode dispersion (PMD) 1, 22, 37
 Polarization, glass fibers: polarization-mode dispersion 1, 86-87, 95; polarization-dependent loss 1, 86-87; polarization hole burning (polarization-dependent gain) 1, 86-87; scrambling 1, 87
 Policy deployment 6, 36-38, 40, 42
 Poloidal electrical currents 3, 83
 Polyethylene molding 4, 11
 Positive Call Processing (PCP) services 3, 5
 Post-consumer acrylonitrile butadiene styrene (ABS) recycle: general 6, 54-55, 57, 59; comparison of typical properties with virgin material 6, 57-58
 Post-filtering 5, 74
 POTS *see* Plain old telephone service
 Power feed equipment (PFE): general 1, 76, 3, 75; submarine cable 1, 19, 20, 25, 33, 35, 40, 43-45

Power industry, evolution of 6, 50-52
 Power integrators 6, 51, 52
 Power utilities, and AT&T 6, 50-52
 Power, for manufacturing and products 6, 44-53
 Power-down of equipment 6, 64
 Power-switched branching unit (BU), submarine cable 1, 40
 Powered-system branch repair 1, 60, 65, 72
 Pre-filtering 5, 74
 Predictability, observed signals and phenomena 3, 81
 Premium power 6, 44, 45, 48-50
 Premium power design team, AT&T 6, 48-50
 Primary rate interface (PRI) lines 4, 94
 Private branch exchange (PBX) 4, 32, 64
 Problem solution knowledge 5, 107
 Processing, voice and audio 2, 5
 Processor evolution 3, 16
 Processor peripheral interface (PPI), 1A processor 3, 20
 Processor upgrade alternatives 3, 15
 Procurement process, environmental management system (EMS) 6, 75
 Procurement-process guidelines, environmental management system (EMS) 6, 76
 Product design at AT&T, green 6, 17-25
 Product take-back: initiatives 6, 54, 56; laws 6, 57
 Product-tests-product concept 3, 53
 Production processes, environmental management system (EMS) 6, 76
 Products and packaging, environmental 6, 77
 Products, power for 6, 44-53
 Program store 3, 11
 Program, undersea cable-protection 1, 64
 Programmable logic controllers (PLCs) 1, 68
 Programmable logic device (PLD) 3, 54, 57
 Programmable video processor (PVP) 5, 73, 74
 Project management team, NSD 1B processor 3, 69
 Propagation loss 4, 28
 Prospector object manager 5, 55, 61
 Protocol functions, MOBITEK* 2, 77
 Proton-exchange membrane (PEM) fuel cells 6, 46
 Provisioning control office (PCO) 2, 108
Provision of Intelligent Agent-Based Enhanced Multimedia Network Services, The 5, 68-77
 PSTN *see* Public switched telephone network
 Public Service Electric and Gas (PSE&G) 6, 52
 Public Switched Telephone Network (PSTN) 4, 85-92, 5, 23-25, 78, 80, 83
 Public Utility Regulatory Policies Act (PURPA) 6, 46
 Pulse-code modulation (PCM): A-law 2, 14; μ -law 2, 14
 Pump laser: general 1, 36, 53; remote 1, 49

Q

Q factor 5, 85
 Q interface (ITU G. 784) 1, 18
 Q.2931 network-level signaling protocol 4, 98-100; 5, 92, 99-104
 QMS/EMS manual: chapters 6, 77; chapter segmentation 6, 77; general 6, 77; operating instructions and process descriptions 6, 77
 Qualification testing, undersea cables 1, 26
 Quality improvement teams, 1B processor 3, 61, 69
 Quality issues, 1B processor 3, 37-38
 Quality management system (QMS) 6, 72-78
 Quality of service 4, 53
 Quality plan, 1B processor 3, 67-68
 Quality requirements, 1B processor 3, 28, 38
 Quality tool, 1B processor project audits 3, 69
 Quality, Engineering, Software, and Technologies (QUEST) 4, 16, 19
 Quantization 5, 73
 Quantized discrete cosine transform (DCT) coefficients 5, 73
 "Quantum Caverns: A Thousand Points of Light" 1, 3
 Quantum well lasers 1, 3
 Quarter common intermediate format (QCIF) 5, 87
 Query predicate 5, 62
 QUEST *see* Quality, Engineering, Software, and Technologies
 Question + Options 2, 84
 Quick Joint technology 1, 64, 70
Quick Prototyping Using JAM for the Customized FT-2 Project* 2, 102-110
 Quick screen authoring 2, 103-105
 QuiteQuiet™ acoustic echo canceler 2, 67, 68, 5, 43

R

Rabiner, Lawrence R. 2, 4-13, 5, 14-33
 Radics, Nancy T. 4, 94-102
 Radio-frequency (RF) spectrum 2, 28
 Ramamurthy, Ram S. 5, 46-53
 Raman effect 1, 97-98, 100
 Raman gain 1, 53, 55
 Random-access memory (RAM) 2, 73
 Rapport media collaboration system 5, 47
 Rapport multimedia conferencing system 5, 4, 34, 35
 Rayleigh scattering 1, 38
 Read-only memory (ROM) 2, 73
 Real-time capacity 3, 13
 Real-time control, customer admission to network 4, 58
 Real-time limit 3, 11
 Real-Time Process Advisor: hydrofluoric (HF) acid etching 6, 31-33; manufacturing vari-

- ation, sources **6**, 32-33; process control methodology **6**, 33; Wet Chem Advisor **6**, 31-32
- Recirculating loop experiments **1**, 98-99
- Recognition algorithms and engine **4**, 18
- Recognizer, speech **4**, 23
- Recursive algorithm **4**, 59
- Recyclability of parts **6**, 55
- Recycled materials: from scrapped products **6**, 57; TransTalk™ 9000 radio base station carrier assembly, rear cover **6**, 59; uses **6**, 57; wall mount for MERLIN® and PART-NER® Communications Systems **6**, 58-59
- Recycling or disposal **6**, 15
- Recycling, and the 5ESS® switch **6**, 61-71
- Reduced instruction set computer (RISC) **5**, 9, 73
- Reduced-load fixed-point approximations **4**, 60
- Redundant arrays of inexpensive disks (RAID) **5**, 65
- Reed-Solomon code system **1**, 51
- Reed-Solomon coder **2**, 30
- Referral chaining **5**, 71
- Regional Bell Companies, and VRCP **2**, 52
- Regular pulse excitation/linear predictive coder (RPE/LPC) **2**, 77
- Regulation 1836/93, environmental **6**, 77
- Rehoming **3**, 12
- Relational database management system (RDBMS) **5**, 56, 60, 61
- Reliability Assurance Plan, 1B processor **3**, 29, 31-32
- ReliaBURST™ traffic management method **4**, 38
- Remote multimedia collaborations **5**, 46-53
- Remote switching modules (RSMs), cellular gateway switch **4**, 89
- Remotely operated vehicles (ROVs), undersea: Pacific SCARAB One **1**, 70-71; Sea-Bed Tractor **1**, 62, 70-71; Sea Plows **1**, 62, 70
- Renewable energy **6**, 44-47, 48-50
- Repair process, wet-plant **1**, 65
- Repeated systems, submarine cable **1**, 29-31
- Repeated-system installation **1**, 60
- Repeaterless transmission **1**, 100
- Repeaters: optically amplified submarine **1**, 33-46; undersea cable systems **1**, 83-92
- Report, historical; loop gains **1**, 77
- Request blocking probability **4**, 52
- Requirements for a Brain Transplant for the New 1B Processor* **3**, 18-27
- Resource conservation **6**, 4
- Restoration system; undersea **1**, 81
- Return-to-vendor programs **6**, 64, 69
- Return-to-zero (RZ) signaling **1**, 94
- Reuse of plastics **6**, 5
- Reverberations, and acoustic echo path **2**, 67
- Rhapsody groupware **5**, 39
- Richardson, Robert E. **5**, 106-116
- Ring configurations, undersea cable network **1**, 85, 88, 91
- RISC *see* Reduced instruction set computer
- Roberts, Janet M. **1**, 8-15
- Roberts, Linda A. **2**, 81-91
- Rodriguez, Jorge S. **5**, 78-91
- Rose, Roger L. **3**, 61-72
- Ross, David G. **1**, 8-15
- Round-trip delay, speakers **2**, 66
- RS-232 ports **5**, 84
- Runge, Peter K. **1**, 7, 93-102
- Russell, Larry A. **3**, 10-17
- Rutkowski, Paul J. **3**, 61-72
- S**
- S language **2**, 2-3
- S-curve charting **4**, 76
- S-VHS video I/O signal format **5**, 83
- Safari® laptop computer **2**, 110
- Saksena, Vikram R. **4**, 38-49
- Saminathan, Manjini **6**, 26-35
- Sanders, Lucinda M. **5**, 46-53
- Sanders, Michael M. **1**, 47-59
- Satellite navigation system **1**, 66
- SB coaxial cable systems, undersea **4**, 5
- Scaleable Image Item Processing System (SIIPS) **5**, 58
- Scaling **5**, 43
- Schafer, Edward T. **3**, 40-48, 61-72
- Scheer, Randall J. **3**, 85-94
- Schesser, Joel **1**, 6, 16-32
- Schiet, J. (Han) J. **4**, 85-93
- Schlough, Susan D. **3**, 28-39
- Schwartz, William C. **5**, 78-91
- Score, comparison **2**, 11
- Screen-based multimedia: communications **5**, 79; quality factors **5**, 89; telephony **5**, 78
- Script Builder™ application generator **2**, 93, 95
- SCSI *see* Small computer system interface
- SD and SF undersea telephone cable installations **4**, 6
- SD-C system, undersea **4**, 6
- SDH architectures *see* Synchronous digital hierarchy
- Sea plows **1**, 62, 70
- Second-order differential (SOD) microphone **2**, 60, 61, 63
- Seese, Larry A. **3**, 5-9, 28
- Sega* software **5**, 125
- Segment, deep-water **1**, 61
- Segmental durations **2**, 35-36, 39-40, 42-43
- Segmental k-means algorithm **2**, 49
- Segmentation **4**, 21
- Seifert, Laurence C. **6**, 4-7
- Sekutowski, Janine C. **6**, 17-25
- Semi-aqueous solvents **6**, 63, 64
- Semiconductor light emitting centers **1**, 3
- Serial input/output (SIO) **2**, 73
- Service environment **5**, 109
- Service, with overload protection **4**, 50-63
- Set-top terminal (STT) **5**, 72-74
- Severely errored second (SES) **1**, 18
- Shapiro, Seymour **1**, 33-46
- Share-nothing architecture **5**, 61
- Sharnan, David **4**, 16-24
- Shih, Chung C. **3**, 18-27
- Ship-speed measurement methods: navigation **1**, 62, 66; taut-wire **1**, 62, 66
- Shore signal and information processing segment (SSIIPS) **4**, 7, 8
- Short-term auditory adaptation **2**, 47
- Short-time spectral analysis **2**, 46
- Shunt fault, submarine cable **1**, 28
- Signal compression **2**, 24
- Signal transfer points **3**, 14, 4, 87, 92-93
- Signal-processing capabilities, computer **2**, 78
- Signal-to-electrical noise ratio (SNR_e) **2**, 61
- Signal-to-noise ratio (SNR) **1**, 34
- Signaling System No. 7 (SS7) **4**, 86-88
- Silent death **3**, 42
- Silica-core fiber **1**, 50, 57
- Silicon Graphics* **5**, 9, 12
- Silicon process technology **2**, 71, 74
- Simple Network Management Protocol (SNMP) **4**, 41, 45-47
- Singing, amplification **2**, 65
- Single armored (SA) submarine cable **1**, 24, 39, 50
- Sipress, Jack M. **1**, 4-7
- Sirocky, William F. **1**, 33-46
- Skill types, primary and secondary **4**, 66
- Skills, DEFINITY® PBX system administrator **4**, 67
- SL100 cable system **1**, 24, 25, 29, 52
- SL1000 cable system **1**, 24
- SL2000 Line Monitoring System (LMS) **1**, 87
- SL2000 undersea lightwave cable system: **1**, 83-92; Americas-1 North **1**, 84, 88-91; Columbus-II B segment **1**, 91; commissioning tests **1**, 90-91; environmental control **1**, 84; general **1**, 3, 24, 25, 27, 33, 37-44; laboratory testbed **1**, 83-85; multiple testbed constructions **1**, 84-85; performance limits **1**, 90-91; TAT-12/13 **1**, 85, 88, 91, 95, 98-99; TPC-5 system, Segment J **1**, 84-85, 95, 99
- SL50 cable system **1**, 24, 25
- Slack, bottom **1**, 62
- SLC® carrier hardware **5**, 95
- SLC®-2000 Access System **5**, 13
- Sliding-frequency guiding filters **2**, 2

- Small computer system interface (SCSI) 2, 92
5, 64, 65
- Smart microphone, loudspeaker 2, 12
- Snapping, in lasers 1, 26
- Soak: environment 3, 44; testing 3, 45
- Social costs 6, 15
- Software agents 5, 68
- Software assembly programming 5, 111
- Software Assembly Workbench (SAW) 5, 8,
106-116
- Software reuse 5, 106-116
- Software user interface layer 3, 89
- Software, internationalizing UNIX* 3, 85-94
- Software-Defined Networks (SDNs) 3, 4
- Software-emulated terminal (SET) model:
general 4, 94-102; implementation 4, 95-
96
- Sohn, John E. 6, 26-35
- Solar cells (*see* photovoltaics)
- Solar: corona 3, 73; coronal-hole boundary 3,
79; emissions 3, 73; minimum and maxi-
mum conditions 3, 79; wind 3, 73
- Soldering 6, 63, 64, 67, 69
- Solid oxide fuel cells 6, 46
- Solid waste disposal 6, 36
- Soliton transmission, 2, 2
- Solitons, in undersea cable systems 1, 93-102
- Solutions, network management system
(NMS) 1, 82
- SONET *see* Synchronous optical network
- Sound surveillance system 4, 4
- Source impedance 2, 64
- Southern New England Telephone 5, 11
- Southwestern Bell 5, 8
- Speaker verification: errors 2, 11; general 2,
10
- Speakerphone 870 2, 61, 67
- Speakerphones 2, 64-69
- Special application (SPA) submarine cable 1,
24, 39, 50
- Spectral subtraction of interfering noise 2, 67, 68
- Speech and image synthesis: face synthesis 5,
21; image synthesis 5, 20-21; talking face
5, 21; text-to-speech synthesis 5, 20
- Speech coders: accentuation 2, 37; attributes
2, 14-17; case study, AUDIX® VMC 2, 14,
19-20; challenges 2, 20-21; code-excited
linear-prediction (CELP) 2, 76; creating a
coder 2, 18; digital cellular systems 2, 17-
18; intonation 2, 39-40; intonational phras-
ing 2, 38-39; product creation 2, 19; proto-
type building 2, 18-19; secure phones (2.4
kb/s) 2, 21; segmental durations 2, 38-
39; setting requirements 2, 17-18; signal
compression 2, 14; 16-kb/s sub-band 2,
19; storage applications 2, 14; storage for-
mat, defining 2, 20; text preprocessing 2,
36-37; word pronunciation 2, 37-38
- Speech Coders: From Idea to Product* 2, 14-22
- Speech coding: adaptive differential pulse
code modulation (ADPCM) 5, 29; general
2, 24
- Speech: enhancement 2, 57, 64; feature 2, 46;
harmonic enhancement 2, 67, 68; recogni-
tion 2, 81-91
- Speech recognition and understanding, cur-
rent capabilities: document image recog-
nition 5, 23; image recognition 5, 22-23;
speaker-independent performance metrics
5, 22; speaker verification 5, 22
- Speech recognition technology: categories 2,
9; feature analysis 2, 9; goals 2, 10; pat-
tern-recognition approach 2, 9; references
2, 49; spectrograms 2, 15
- Speech synthesis: converting parameters to
acoustic inventory elements 2, 41-42; con-
verting phonemes to acoustic inventory
elements 2, 40-41; general 2, 35-44; para-
metric representation 2, 40; telephone-
bandwidth 2, 5; wideband 2, 6
- Splicing, fiber 1, 51
- Spontaneous photon emission 1, 34
- Sproat, Richard W. 2, 35-44
- Srinivas, Tanjore K. 2, 102-110
- Stability index 3, 44
- Stafford, Elaine K. 1, 6, 21, 25, 47-59
- Standards for screen-based multimedia termi-
nals 5, 89
- StarLAN 4, 26
- Static random-access memory (SRAM) 2, 73
- Statistical pattern recognition 2, 47-49
- Statistical redundancy 2, 24
- Steady-state (dc) geopotential 3, 83
- Stefannaci, Emil F. 6, 21, 54-60
- Stenard, Charles E. 4, 16-24
- Sterling, Warren 5, 54-67
- Stevens, Steven L. 4, 85-93
- Stimulated photon emission 1, 34
- Stix, Marsha Spaulding 1, 16-32
- Stolte, Brian K. 6, 21, 61-71
- Stored program controlled (SPC) toll
exchange 3, 10
- Stratcom Broadband Packet Exchange
(BPX) 4, 43, 45
- Stratcom Integrated Packet Exchange (IPX)
4, 43
- Stratospheric ozone depletion 6, 9, 11
- Stress for life (STRIFE) testing 3, 8, 32
- Stress-to-life (STRIFE) test 3, 54
- STRIFE *see* Stress for life, stress-to-life
- Stripping 5, 65
- Strom, B. Ivan 4, 16-24
- Structural risk minimization 4, 20
- Structured query language (SQL) 4, 79 5, 56,
61-63
- Structured wafer-based intelligent memory
system (SWIM) 1, 2
- Structures, undersea; redundant ring, mesh 1,
12
- Stylus, and speech recognition 2, 89
- Sub-T1 connections 5, 81
- Subband echo cancellation (SBEC) 2, 65,
66, 67
- Submarine cable 1, entire issue
- Submarine cable technology, overview 1, 4-7
- Submarine lightwave (SL) mediation equip-
ment (SME) 1, 79
- Submarine Systems Inc. (AT&T-SSI) 1, entire
issue
- Submersible craft assisting repair and burial
(SCARAB) 1, 62, 70
- Substorms, geomagnetic 3, 79
- Summing array microphones 2, 60-62
- Sun Microsystems 2, 103-105
- Sun*: general 5, 11; SparcCenter* 2000 hard-
ware platform 4, 45; workstation 6, 29
- SunNet* Manager platform 4, 47
- Sunspot activity 3, 77
- Super-VHS (S-VHS) video I/O signal format
5, 83
- Superconducting magnetic energy storage
(SMES) 6, 47, 48
- Supporting processes, environmental 6, 77
- Suppression techniques 4, 29
- Sustainable development 6, 4
- SWAT team 4, 70
- Switch exhaust: general 3, 10; real-time mem-
ory 3, 12
- Switch intelligence, high-level network
requirements 3, 14
- Switch resources: terminations, simultaneous
calls, real time, memory 3, 11
- Switch terminations supported 3, 16
- Switched 56 adapter 5, 88
- Switched Access Remote Testing System
(SARTS) 2, 105-109
- Switched digital video (SDV) network access
technology 5, 92-105, 119
- Switched Multi-megabit Data Service
(SMDS*) 4, 41; 5, 125-125
- Switched virtual circuit (SVC) connections 4, 41
- Switched-digital-video access multimedia solu-
tions 5, 13
- Switched-loss controller 2, 66
- Synchronous digital hierarchy (SDH): archi-
tectures 1, 81; general 1, 16, 19, 40-43, 51,
78
- Synchronous optical network (SONET): gen-
eral 1, 18, 51 3, 5 4, 30, 32 5, 27, 29, 92;
ring 4, 43; transmission equipment 4, 48
- Synchronous transport signal (STM): frame
4, 32; overhead part 4, 30; payload
part 4, 30
- Synthesis, text-to-speech (TTS) 2, 7

System integration and performance verification (SI/PV) 3, 40, 41
 System integration and performance verification (SI/PV) testing program, results and future directions 3, 45
 System/370 4, 79
 Systems-based pollution control 6, 41
 Systems-engineering (SE) group 3, 44
 SYSTIMAX® product line 4, 26
 Szurkowski, Edward S. 5, 117-29

T

T1 connections 5, 80, 81
 Take-back program 6, 14, 36, 64, 66, 69 (*see also* return-to-vendor programs)
 Talk over 5, 41
 TalkBak™ loudspeaker/microphone 2, 61
 Talking heads 5, 84
Talking to Machines Today and Tomorrow: Designing for the User 2, 81-91
 Tanks, cable 1, 60
 Target 4, 18
 TAT *see* Trans-Atlantic telecommunications system
 Taut-wire method of measurement, ship speed 1, 62
 TCC *see* Technology Control Center
 TCI* *see* TeleCommunications, Inc.
 TCP/IP *see* Transmission control protocol/Internet protocol
 Technology Control Center (TCC) 3, 41, 42, 46
 Technology curve 3, 15
 Technology, flash 2, 74
 Technology, jointing and coupling: 1-type 1, 71; 10-type 1, 71; 11-type 1, 71
 Technology: repeated and nonrepeated 1, 11, 75; undersea branching 1, 12; undersea fiber-optic 1, 10
 Teger, Sandra L. 5, 4-13
 Telecommunication sector, privatization and liberalization 1, 10
 Telecommunications Industry Association (TIA) 4, 28
 Telecommunications management network (TMN) 1, 79
 TeleCommunications, Inc. (TCI*) 5, 4, 8
 Telecommuting 6, 42
 Teleconferencing 2, 6
 Telefónica I&D 2, 44
 TeleMedia (Vistium™) multimedia platform 5, 39
 TeleMedia Personal Video System 5, 87
 Telephone and CATV companies 5, 11
 Teleshopping 5, 68, 71
 Teleworking platforms 6, 14
 Temporal (frame-to-frame) filtering 5, 74
 Tension, bottom 1, 62
 Teradata® Database System 5, 55, 60
 Terminal equipment, technology of 2, 57-70
 Terminal gear 3, 12
 Terminal post-amplifiers, submarine cable 1, 52, 53
 Terminal pre-amplifiers, submarine cable 1, 52, 53
 Terminal stations, modular 1, 70
 Terminal transmission equipment (TTE), submarine 1, 33, 35, 40-43
 Terpene hydrocarbon 6, 63
 Testbed amplifiers, architecture 1, 84
 Testbeds: construction 1, 84-85; optical system 1, 83-92; measurements 1, 86-87; network protection equipment testing 1, 88; prototypes 1, 84-85
 Testing process, Electronic Industries Association (EIA) National Radio Systems Committee (NRSC) 2, 30
 Testing: back-scatter 1, 78; optical time-domain reflectometry (OTDR) 1, 77
 Texas Instruments Multimedia Video Processor (MVP) chip 5, 32
 Text to speech (TTS): accentuation 2, 37; algorithms 2, 35, 39; AMIGO 2, 44; architecture 2, 42-44; conversion 2, 35-44; intonation 2, 39-40; intonational phrasing 2, 38; IPEX (Interactive Prosody Editor running under X Window System*) 2, 39-40, 43; linguistic analysis 2, 36-40; Mandarin system 2, 37; segmental durations 2, 35-36, 39-40, 42-43; speech synthesis 2, 40-42; text analysis 2, 35-40; word pronunciation module 2, 38
Text-to-Speech Synthesis 2, 35-44
 Thermal recycling 6, 64
 Thevenin/Norton equivalent models, in 1B processor design 3, 31
 Thompson, Matthew V. 4, 4-15
 Thompson, Robin J. 4, 85-93
 Thomson, David J. 3, 73-84
 Thomson, David L. 2, 45-56
 Thorkildsen, Reed 2, 14-22
 Threshold of audibility (TOA) 2, 31
 Thurmond, Walter H. 3, 61-72
 TIA/ELA-568A 4, 28
 Tiers, undersea network (domestic, regional, inter-regional, special applications, global, transoceanic) 1, 11
 Time-domain masking 2, 26
 Time-to-market factor 2, 74
 Time-Warner* 5, 8, 11
 Tin: in flux 6, 64; recovered 6, 68
 Tip-of-the-tongue state 2, 89
 TLP *see* Trouble-locating procedure
 Toluene 6, 63
 Tone-masking-noise 2, 26
 Tools, underwater 1, 70
 Toroidal magnetic field 3, 83
 Total quality environmental management (TQEM) 6, 36, 41
 Total quality management (TQM) 6, 8, 36-38, 40, 41, 42
 Touch-free energy transfer, flywheels 6, 47

Townsend, Jr., Richard L. 4, 25-37
 TPC-1, TPC-2 *see* Trans-Pacific Cable system 1 and 2
 TPC-5 *see* Trans-Pacific Cable system 5
 Traffic restoration 1, 78
 Training Center 3, 56
 Training center, Baltimore 1, 72
 Training database 4, 18
 Training, new agent 4, 70
 Trans-Atlantic telecommunications system (TAT): TAT-1, 1, 5, 4, 5; TAT-2 4, 5; TAT-3, TAT-5 4, 6; TAT-6 3, 76; TAT-7, TAT-8 1, 4, 17, 18 3, 77; TAT-9 1, 99; TAT-12, TAT-13 1, 17, 18, 24, 28, 41, 85, 88, 91, 95, 98-99
 Trans-Pacific Cable system 1 (TPC-1) and 2 (TPC-2) 3, 78
 Trans-Pacific Cable system 5 (TPC-5): general 1, 4, 6, 18, 24, 41; Hawaii and Guam 1, 85; Segment J 1, 84-85, 88, 91; transmission capacity 1, 99
 Transaction Processing Performance Council (TPC-A, -B, and -C) 5, 62
 Transducers: electroacoustic 2, 12; general 1, 57-64
 Transistor density 2, 74
 Transmission and distribution (T&D), power for 6, 46
 Transmission control protocol/Internet protocol (TCP/IP) 4, 78, 79 5, 75, 65
 Transmission equipment, shore-based SDH 1, 14
 Transmission fiber, comparison 1, 49
 Transmission test room 1, 66
 TransTalk™ 9000 radio base station carrier assembly 6, 59
 Trouble Reception Centers 2, 109
 Trouble reporting, undersea system 1, 64, 82
 Trouble-locating procedure (TLP), 1B processor 3, 33-34
 True Voice® service 2, 87
 Trunk reservation (TR) 4, 52-63
 Trunk splintering penalty 3, 13
 Trushin, Joan E. 3, 18-27
 Tsunami-induced voltage change 3, 82
 TTS *see* Text to speech
 Tuples 5, 61, 62

U

U S West: general 5, 4, 8, 126-128; speech recognition trial 2, 52
 U. S. Clean Air Act 6, 14
 U. S. Environmental Protection Agency (EPA): Energy Star Computers Program 6, 20; Energy Star eco-label 6, 14; Industrial Toxics Project 6, 19
 U. S. naval facilities 4, 4
 U. S. Council of Northeast Governors 6, 20

Undersea acoustic detection equipment 4, 4
 Undersea cable (*see* submarine cable)
 Undersea cable systems: general 1, 83-102;
 ring configurations 1, 85, 88, 91; technologies, new 1, 93-102
 "Undersea Cable Upgrades Proven Feasible" 1, 23
Undersea Communications Technology 1, 4-7
 Undersea communications technology 1, entire issue
 Undersea lightwave systems 4, 7
 Undersea network, global 1, 8
Undersea Non-Repeatered Technologies, Challenges, and Products 1, 47-59
Undersea Optically Amplified Repeatered Technology, Products, and Challenges 1, 33-46
 Undersea plant, maintenance of, engineering factors (routing, cable selection, burial method) 1, 64
 Undersea products, AT&T: repeatered (SL2000, SL1000), nonrepeatered (SL100) systems 1, 10
 Undersea systems, optically amplified, design and deployment 1, 83-92
 Undersea systems, three general types of (long-haul transoceanic [LHT], regional festoon [RF], short haul [SH]) 1, 63
 Underwater acoustic detection hardware 4, 4
 Underwater segment (UWS) 4, 7
 Underwater systems, future uses 4, 7
 Underwriters Laboratories (UL): end-product safety standards 6, 57; flammability test 6, 59; general 6, 19; recycled material qualification program 6, 57; recognized plastic compound 6, 57; recognized resin 6, 57
Uneventful Event, An 3, 4-5
 Unicode 3, 86
 Unidirectional/bidirectional channel 2, 66
 Unit fiber structure (UFS), submarine cable 1, 38, 48, 50
 United States Postal Service 5, 58
 Units, neural network 4, 19
 Universal Card, and speech recognition 2, 53, 54
 Universal jointing and coupling (UJ/UC) 1, 71
 Universal Restoration Manual (URM) 1, 81
 Universal time (UT) 3, 77
 University of Minnesota, Department of Rhetoric 5, 126-128
 UNIX*: internationalizing software projects 3, 85-94; operating system: environment 6, 29; general 2, 20; 3, 35; platform 5, 96-97; system 2, 3, 105, 106; 4, 79; 5, 75, 107; workstation, in InterSpan® Customer Network Management (CNM) service 4, 47
 UnixWare*: exec (2) function 2, 98; file descriptors 2, 97; file system 2, 97;

idbuild commands 2, 100; kernel 2, 94; operating system 2, 92, 95, 97, 99; SRV4 shared object file 2, 99
 Unshielded twisted pair, and asynchronous transfer mode (ATM) 4, 25-37
 Unshielded twisted pair: Category 3 4, 26, 27, 29, 32; Category 5 4, 26, 28
 Upper layer capabilities, software 5, 110
 Upper-limit (UL) bounds 4, 50-63
 Usability engineering, and speech recognition 2, 82
 User Identifier 4, 72
 User-centered design, and speech recognition 2, 82
 User-defined functions (UDF) 5, 56, 62
 User-network interface (UNI) 4, 32
Using Technology to Bring ATM to the Desktop 4, 25-37
 Utilities, and AT&T 6, 50-52
 Utility system, 1B processor 3, 31
 Utterance verification 2, 51, 52

V

V Protocol: general 5, 92-105; philosophy 5, 99-100; resource deletion 5, 104; resource request 5, 104; resources 5, 100; scenarios 5, 100-101; session setup 5, 101-104; session teardown 5, 104; signaling reference model 5, 99
 V.34 modem: general 5, 80; standards 2, 77
 V.34bis modem 5, 82
 V.8 protocol 5, 80
 V.8bis protocol 5, 80
 Vallone, Lee A. 4, 94-102
 Van Allen radiation belts 3, 73
 Variable bit rate (VBR) services 4, 41, 43-44, 47
 Variable random access memory (VRAM) 5, 73
 VCOS (Visible Caching Operating System) 2, 78
 VCTV *see* Viewer-controlled cable television
 Vector Directory Number (VDN) skills 4, 67
 Vertically integrated services, undersea 1, 80
 Very large system integrated (VLSI) architectures, dedicated 5, 31
 Vessels, support 1, 63
 Veterans Administration (VA) hospital 5, 127-128
 Video call window 5, 89
 Video controller and processor (VCP) 5, 74
 Video Manager, the: functionality 5, 97-98; general 5, 92-105; network provider support 5, 98-99; operations, administration, and maintenance (OA&M) 5, 98; software architecture 5, 96-97
 Video processing building blocks 5, 73
 Video random access memory (VRAM) 5, 83
 Videoconference coding, bit rate 5, 20
 VideoPhone 2500®: general 2, 61; video sub-

system 5, 83
 Videotelephony 5, 12, 93
 Viewer-controlled cable television (VCTV) 5, 4
 Virtual functional domain 5, 113
 Virtual meeting room (VMR), Rapport multimedia collaboration system 5, 47-49
 Virtual Meeting Service: concept 5, 49; general 5, 39
 Virtual utilities 6, 51
 Visible Caching Operating System (VCOS) 2, 78
 Vision 2001 2, 4-13, 71, 79
 Visitorbot 5, 70
 Vistium™ 1200 System: application software 5, 89; Audio Unit 5, 89; camera options 5, 89; peripherals 5, 89
 Vistium™ 1300 System: architecture 5, 87
 Vistium™ Personal Video System 1200 and 1300 2, 67
 Vistium™ Personal Video System 5, 56
 Vistium™ Solutions offering 5, 87
 Vistium™ system: customer applications 5, 87; general 5, 46, 78, 79, 87; terminal 5, 11
 Visual connectivity 5, 78
 Visual meeting minutes (VMM) 5, 37
 Viterbi processing 2, 77
 VLSI *see* Very large system integrated
 VMM *see* Visual meeting minutes
 Voice and audio processing 2, entire issue
 Voice and audio processing, segments 2, 5
 Voice English-Spanish Translator (VEST) 2, 11
 Voice Interactive Phone (VIP) 2, 52
 Voice messaging products, AT&T Global Business Communications Systems (AT&T-GBCS) 2, 92
 Voice of America/NASA/JPL DBS System 2, 32
 Voice Recognition Call Processing (VRCP) 2, 9, 45, 52
 Volatile organic compound (VOC) emissions, reducing: eliminating ozone-depleting substances (ODSs) 6, 33-34; general 6, 33-34; VOC-free, no-clean fluxes 6, 34
 VRAM *see* Video random access memory

W

Walch, Philip F. 1, 83-92
 Warner, Jack C. 5, 117-129
 Waste disposal, reduction of 6, 38, 39
 Waste Minimization Tool, on-line tracking system 6, 28-29
 Waste minimization: Basic Chemical Tracking System (BCT) 6, 29; benefits 6, 29; general 6, 27-29; Corporate Costing System (CCS) database 6, 29; Massachusetts Toxic Use Reduction Act (TURA) 6, 28; quantifying streams 6, 29; summary and benefits 6, 29; system architecture 6, 29;

- system outputs **6**, 29; Waste Minimization Tool **6**, 28-29
- Waste-reduction process, three stages **6**, 11
- Water conservation and reuse: Clean Water Act **6**, 30; economics **6**, 29-30; hidden benefits **6**, 30; product and process quality **6**, 30; regulatory factors **6**, 30; strategy and technology **6**, 30-31
- Water-only aqueous cleaning **6**, 63
- Water-soluble flux **6**, 63
- Wattenbarger, Blake L. **2**, 81-91
- Wave solder: general **6**, 64; process **3**, 59
- Wavelength division multiplexing (WDM): general **1**, 94-100; submarine cable **1**, 20, 21, 36, 52, 53, 55, 57, 58 **2**, 2
- Wavelength-splitting branching units **1**, 58
- "WDM Channel Strength Equalization in Guiding-Filter Soliton System" **2**, 2
- WE[®] DSP1 **2**, 19
- WE[®] DSP20 **2**, 19
- WE[®] DSP32C **2**, 19
- Weights **4**, 18
- Welch, David A. **3**, 28-39
- Werner, Jean-Jacques **4**, 25-37
- Western Electric, environmental goals **6**, 37
- Wet Chem Advisor: Engineering Research Center (ERC) Cleaning Team **6**, 33; general **6**, 31-32
- Wet plant, submarine cable **1**, 19, 24, 33, 48, 49
- Whippany, proposed wireless power test **6**, 49
- Whiteboard **5**, 42
- Whitt, Ward **4**, 50-63
- Wide characters **3**, 86
- Wightman, Glenn C. **6**, 21, 61-71
- Wildfire's messaging assistant **5**, 69
- Williams, George **6**, 26-35
- Wilson III, Ralph A. **3**, 28-39
- Window-switching perceptual coder **2**, 26
- Windows* 3.1 PC platform **6**, 27
- Windows* **5**, 75, 85, 87
- Wireless systems, power for **6**, 44, 45, 49
- Wireless technology **3**, 5
- Wireless voice dialing, speech recognition **2**, 53
- Witness[™] Simulation Package **3**, 52
- Wizard-of-Oz methodology **2**, 82-86
- Word dictionary **2**, 9
- Word for Windows* **5**, 107
- Work Management System (WMS), in 1B processor **3**, 71
- Work-at-home arrangements **5**, 10
- World Wide Web: 800 Directory on **2**, 3; browsers **5**, 43; general **5**, 9, 43, 58, 76 **6**, 21
- WorldPlus[™] service **2**, 9, 11
- WorldWorxSM Network Services **5**, 46
- WorldWorxSM Personal Conferencing Service: CENTREX services **5**, 50; general **5**, 49-52; Switched Digital Service (SDS) **5**, 50; Software-Defined Digital Network (SDDN) **5**, 50
- X**
- X-Window System* **3**, 87, 89 **5**, 98
- X.25 protocol **5**, 83
- X/Open Common Application Environment (CAE) **3**, 86
- X/Open Portability Guide Issue 4 (XPG4) **3**, 86, 87, 89
- xterm* **5**, 35
- Y**
- Yeung, Man Keung **2**, 102-110
- Z**
- Zeile, Stephen A. **3**, 28-39
- Zero-dispersion wavelength (ZDW) **1**, 37, 38
- Zero-emissions facility **6**, 12
- Zinc chromate, waste **6**, 67
- Zsakany, John C. **1**, 6, 8-15, 20
- Zuckert, Derek **4**, 16-24
- Zuniga, Michael A. **2**, 57-70

